

THE
AMERICAN
JOURNAL OF OBSTETRICS

AND
DISEASES OF WOMEN AND CHILDREN

EDITED BY

BROOKS H. WELLS, M.D.,

*Adjunct Professor of Gynecology, New York Polyclinic; Fellow of the New York
Academy of Medicine, the New York Obstetrical Society, etc.*

85490
15/1/00

VOLUME XLII.

JULY-DECEMBER, 1900

NEW YORK
WILLIAM WOOD & COMPANY
1900

T. -

A

4-

LIST OF CONTRIBUTORS.

ALLABEN, J. E., Rockford, Ill.
ATLEE, L. W., Philadelphia, Pa.
BACON, C. S., Chicago, Ill.
BALDWIN, J. F., Columbus, O.
BECK, CARL, New York.
BEYEA, HENRY D., Philadelphia, Pa.
BIRD, U. S., Tampa, Fla.
BOVÉE, J. WESLEY, Washington, D. C.
BRODHEAD, GEORGE L., New York.
BURRAGE, W. L., Boston, Mass.
BYERS, JOHN W., Belfast, Ireland.
CARR, WILLIAM P., Washington, D. C.
CARSTENS, J. H., Detroit, Mich.
CLARKE, AUGUSTUS P., Cambridge, Mass.
COOK, GEORGE WYTHE, Washington, D. C.
CORSON, EUGENE R., Savannah, Ga.
DAYTON, H., New York.
DAVIS, EDWARD P., Philadelphia, Pa.
DEAVER, JOHN B., Philadelphia, Pa.
DE WITT, LYDIA M., Ann Arbor, Mich.
DORLAND, W. A. NEWMAN, Philadelphia, Pa.
DUDLEY, A. PALMER, New York.
DUNNING, L. H., Indianapolis, Ind.
ENGELMANN, GEORGE J., Boston, Mass.
FISH, E. F., Milwaukee, Wis.
FISKE, EUSTACE L., Fitchburg, Mass.
FRY, HENRY D., Washington, D. C.
GOLDSPOHN, A., Chicago, Ill.
HALL, RUFUS B., Cincinnati, O.
HERZOG, MAXIMILIAN, Chicago, Ill.
HILL, R. S., Montgomery, Ala.
HOWITT, HENRY, Guelph, Ont.
ILL, EDWARD J., Newark, N. J.

- INGRAHAM, HENRY D., Buffalo, N. Y.
 JONES, MARY DIXON, New York.
 KELLY, HOWARD A., Baltimore, Md.
 KLINGENSMITH, I. P., Blairsville, Pa.
 KNOX, JR., J. H. MASON, Baltimore, Md.
 KREIDER, G. N., Springfield, Ill.
 LAIDLEY, L. H., St. Louis, Mo.
 LEWIS, HENRY F., Chicago, Ill.
 METCALF, WILLIAM F., Detroit, Mich.
 MORAN, JOHN F., Washington, D. C.
 NOBLE, CHARLES P., Philadelphia, Pa.
 NOBLE, GEORGE H., Atlanta, Ga.
 O'HARA, JR., M., Philadelphia, Pa.
 PERCY, J. F., Galesburg, Ill.
 PRICE, JOSEPH, Philadelphia, Pa.
 REED, CHARLES A. L., Cincinnati, O.
 REED, CHARLES B., Chicago, Ill.
 RICKETTS, EDWIN, Cincinnati, O.
 ROSS, JAMES F. W., Toronto, Can.
 SIMPSON, FRANK F., Pittsburg, Pa.
 SMITH, A. LAPHORN, Montreal, Can.
 SMITH, RICHARD R., Grand Rapids, Mich.
 STINSON, J. COPLIN, San Francisco, Cal.
 THIENHAUS, O., Milwaukee, Wis.
 VANDER VEER, A., Albany, N. Y.
 VINEBERG, HIRAM N., New York.
 WARTHIN, ALDRED SCOTT, Ann Arbor, Mich.
 WATHEN, WILLIAM H., Louisville, Ky.
 WEBSTER, J. CLARENCE, Chicago, Ill.
 WEIR, WILLIAM H., Cleveland, O.
 WILSON, W. REYNOLDS, Philadelphia, Pa.
 THE AMERICAN GYNECOLOGICAL SOCIETY.
 THE AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS.
 THE COLLEGE OF PHYSICIANS OF PHILADELPHIA.
 THE NEW YORK OBSTETRICAL SOCIETY.
 THE OBSTETRICAL SOCIETY OF LONDON.
 THE SOUTHERN SURGICAL AND GYNECOLOGICAL ASSOCIATION.
 THE WASHINGTON OBSTETRICAL AND GYNECOLOGICAL SOCIETY.
 THE WOMAN'S HOSPITAL SOCIETY.

THE AMERICAN
JOURNAL OF OBSTETRICS
AND
DISEASES OF WOMEN AND CHILDREN.

VOL. XLII.

JULY, 1900.

No. 1.

ORIGINAL COMMUNICATIONS.

SYNCYTIOMA MALIGNUM AND ECTOPIC GESTATION CAUSING
PERNICIOUS NAUSEA.¹

BY

EDWARD P. DAVIS, A M., M.D.,

Professor of Obstetrics in the Jefferson Medical College; Professor of Obstetrics and Diseases of Infancy in the Philadelphia Polyclinic; Visiting Obstetrician to the Jefferson, Philadelphia, and Polyclinic Hospitals,

AND

H. F. HARRIS, M.D.,

Associate Professor of Pathology in the Jefferson Medical College.

(With plate and four illustrations.)

AT our meeting in 1894 cases of pernicious nausea of pregnancy were reported in which the cause of the condition seemed to be a pathological state of the pelvic viscera, and the Fellows of this Society, in an extended discussion, described many similar cases. Within the past year it has been my experience to see two cases in which the pelvic viscera were not concerned in the usual manner in the production of pernicious nausea. The report of these cases is as follows:

Case I., age 40, has one child, age 19; had always men-

¹ Read by title before the American Gynecological Society, at Washington, D. C., May 3, 1900.

struated irregularly and had suffered from chronic dyspepsia with derangement of the functions of the liver. Had missed her menstruation for two months, but was positive that pregnancy could not be present. Severe nausea obliged her to seek medical aid. This symptom was so distressing that, in the absence of other known cause, her physician, Dr. Louis Jurist, strongly suspected pregnancy, which was denied. Severe abdominal pain and shock occurred, and when the patient was seen in consultation ectopic gestation was diagnosticated. Upon abdominal section, the ovum had been situated in the cornu of the uterus, which had ruptured into the abdominal cavity. The patient recovered.

Case II., age 40, had been pregnant fourteen times, her youngest child being 14 months old. Her labors had been spontaneous, but during labor she manifested symptoms of catalepsy and was extraordinary for her apparent indifference to the sufferings of parturition. She had missed her menstruation for nearly two months and had pernicious nausea. Although the patient was of robust physique and had been a strong woman, she was excessively prostrated when seen. Early pregnancy was diagnosticated, with pernicious nausea. As her physician had exhausted treatment by rest in bed, careful feeding, and good nursing, she was transferred to a private room in the Jefferson Maternity, where an effort was made to nourish the patient by intestinal feeding. An examination revealed the uterus in normal position and no evidence of abnormality of the pelvic tissues. She did not improve, and the uterus was dilated and emptied under ether. An early ovum and membranes were curetted away, and the patient's nausea was temporarily relieved.

She did not, however, regain strength, had paroxysmal attacks of vomiting, became at times almost maniacal, passed feces and urine involuntarily, and died of apparent exhaustion. She was seen during her illness by physicians interested in nervous diseases, and a probable diagnosis of temporary insanity, of malnutrition and anemia, was made. She retained consciousness until very shortly before her death. Her pupils were unaltered and her one complaint was of intense headache. This was referred to different portions of the cranium.

An autopsy was obtained through the courtesy of her husband, and the pathological findings and report are contributed by Dr. H. F. Harris, Associate Professor of Pathology in the Jefferson Medical College. His report is as follows:

Body of a rather large, well-nourished female, apparently 40 years of age. Postmortem rigidity marked. Skin of a yellowish hue. Mucous membranes present the usual appearances after death. There is present an incision, one centimetre long, on the inner surface of the left elbow, which is almost healed.

On opening the cranium the vessels of all the membranes, and especially of the pia arachnoid, are found distended with blood, this being present to a more marked degree than is usually the case. There is a very small amount of cerebrospinal fluid. The pia arachnoid, particularly along the larger vessels, seems in some places slightly thickened; this is especially marked in the vicinity of the longitudinal fissure and extending over the convexity of the brain downward on either side. Only one Pachionian body is found; this is situated eight centimetres anterior to the fissure of Rolando and two centimetres to the left of the longitudinal fissure.

As the brain was being removed an irregularly rounded, tumor-like mass was found adhering to the dura covering the most posterior portion of the cranial cavity on the right side, and a rounded depression, into which this tumor projected, is present in the tip of the occipital lobe of the cerebrum on the corresponding side. The tumor is mottled, some parts of its posterior surface being bright red, other parts a deep reddish brown, and in still other situations grayish in color. On section the substance of the tumor is found to be moderately soft. Toward its centre the mass is of a reddish-gray color, while surrounding this is an irregular border which is considerably darker in color. This tumor is 1.5 centimetres in diameter and is found, on close examination, to be firmly attached to the dura. The depression in the brain substance which corresponds to this tumor answers to it in size, and the nervous structures surrounding are decidedly softened. On section a tumor-like mass, almost as large as the one just described, is found in the substance of the occipital lobe beneath the cavity occupied by the tumor first referred to. Another large mass, resembling in every way those just mentioned, is found to occupy the posterior portion of the left cerebellar hemisphere, though it does not project above the surface; however, its border, which is of a dark red color, is apparently immediately beneath the membranes covering the area occupied by the new formation. On the upper surface of the occipital lobe of the left cerebral hemisphere, 3 centimetres anterior to the posterior tip of the lobe and 4.5 centimetres from the longitudinal fissure,

another of these tumors is found, its outer surface showing just beneath the pia arachnoid. On section into the brain substance, this tumor is found to be oval in form and 1 centimetre in diameter. The tumor is of the color of a recent blood clot around its periphery, but it is of a reddish-gray tint in the central portion. Still deeper in the gray substance, 2 millimetres from the edge of this lesion, there is another corresponding to it in every way. While removing this mass for examination another was found in the white substance just posterior to it. Three centimetres anterior to this and the same distance from the median line another tumor was found, its edges being just perceptible on the surface of the brain at this point. This tumor is quite closely associated with one of the larger veins which passes over its surface. Only one tumor is found on the surface of the right cerebral hemisphere; this is situated in the frontal lobe just anterior to the fissure of Rolando and 3 centimetres from the median line.

The ventricles contain but little fluid. In the right lateral ventricle a very large tumor, of the same kind as those already described, is found (Fig. 1). It is irregular in form, and shows upon its free surface many slight elevations and depressions, and presents all variations in color from that of a recent blood clot to a light grayish hue. Internally this mass is rather dark in color, but there are many areas of grayish discoloration. The tumor lies upon and is attached to the optic thalamus, its anterior border corresponding to that of this body, and extends backward a distance of 4.5 centimetres. It reaches to the median line internally and projects outward about three centimetres. It is observed that the brain substance surrounding this tumor is very much softened.

It is noteworthy that the smaller these tumors are the greater the amount of dark red, blood-colored material which forms their outer zones, and the less the quantity of internal gray substance. This is especially the case in several smaller tumors that were found here and there in the gray substance, and to the presence of which no reference has been made in the notes.

On cutting through the abdominal wall a large quantity of subcutaneous fat is found, being at its thickest portion 4 centimetres. The muscle of the abdominal wall is of the usual color and consistence. On opening the abdominal cavity the viscera were found normally moist. There is slight coloptosis. The upper border of the liver is between the fourth and fifth

ribs, and the lower border 5 centimetres below the ribs in the right mammary line.

Left pleural cavity contains 50 cubic centimetres of dark blood-stained fluid; it is otherwise normal.

At the outer and upper portion of the right lung there are several recent adhesions between the two layers of the pleura. The cavity contains about 15 cubic centimetres of blood-stained fluid.

The heart is in its normal position. Pericardial cavity contains 5 cubic centimetres of clear, yellowish-red fluid. Pericardium normal. Heart exceedingly flabby. Cavities of the left side contain a small amount of dark, semi-clotted blood; in the right side the blood is in a similar condition, but somewhat greater in quantity. Heart substance is pale and very friable. Aortic and pulmonary valves are continent. Left auriculo-ventricular opening admits three fingers; the right, four. Valves are all normal, but the endocardium of both sides of the heart is intensely blood-stained. The intima of the blood vessels passing out of the heart is likewise blood-stained. Heart weighs 340 grammes.

Bronchial tubes of the left lung are normal. Under the pleura there are scattered over the surface of the left lung minute tumor-like masses having somewhat the appearance of miliary tubercles. These masses are firm, grayish in color, and are sharply defined from the surrounding healthy structures. The largest of these tumors is 0.5 centimetre in diameter. None of these masses presents apparent caseation in the centre, although they are so small that this cannot be said with certainty. They are somewhat triangular in form, with their bases toward the pleura, thus resembling infarcts. Weight of left lung, 620 grammes.

The same condition is found in the right lung, except that in the upper and outer portion of the upper lobe there is an area of complete consolidation about 5 centimetres in diameter. Within this area a great many of these grayish nodules are found, and in the central portion quite a large, very irregular grayish mass in which the tissues present all the appearances of being in a degenerated condition. Weight of right lung, 750 grammes.

Spleen weighs 200 grammes. It is normal in every way.

Left adrenal is normal. On the outer surface of the left kidney there is a large tumor projecting outward for a distance of 4.5 centimetres (Fig. 2). Over the surface of this tumor

there are some areas that appear very dark, almost of a slaty color, while in other situations the color is almost gray. On section this tumor is found to be almost round and to have a diameter of 5.5 centimetres. It is well defined from the surrounding tissue. On close examination it seems to be made up of irregular lobes that are separated by bands of fibrous tissue. In these lobes there are seen smaller strands of fibrous connective tissue traversing them in every direction. The material which lies between these fibrils just described differs considerably in different parts of the tumor. Usually it has the appearance of recently-clotted blood, being quite dark and soft, but at other points it appears cheesy. Weight of left kidney, 270 grammes.

Right adrenal normal. Right kidney is decidedly enlarged. On section it is found to be of the normal consistence; the cortical substance, however, is evidently thin, it being at no point thicker than 0.5 centimetre. At the point of union between the cortex and pyramids the tissues are unusually dark. The capsule strips off with readiness, but it is perhaps somewhat more adherent than usual. Weight, 222 grammes.

The right ovary contains a few small cysts; the left ovary is normal.

The uterus weighs 200 grammes. On section it is found to be entirely normal. Within its cavity are a few semi-organized clots which are small and without odor and exhibit no evidence of septic infection.

The bladder is normal. The stomach is rather flabby; on its mucosa, especially on its upper portion, are the numerous ecchymoses which are always seen after death. The small and large intestines are normal. The pancreas is normal; weight, 110 grammes.

The liver is normal in size, weighing 1,770 grammes. The organ is quite flabby. The substance is pale and quite friable. In the upper portion of the right lobe there is an almost perfectly rounded tumor measuring 2.5 centimetres in diameter. The tumor is exceedingly well defined, is apparently encapsulated, and external to this is a thin layer of degenerated liver tissue separating it from the normal liver substance. Externally the tumor is just beneath the capsule of the organ. The substance of the tumor is made up of a reddish-gray material with numerous small irregular areas of what is apparently recently-clotted blood. The substance of this tumor is rather soft. The gall bladder is normal and the bile duct is patulous

The thyroid weighs 75 grammes. The right lobe is somewhat larger than the left. The left, especially toward its upper portion, contains several areas, partially encapsulated, in which the substance is much more friable than in the normal portions, and in some regions there are present what appear to be a few cysts. In other parts of the gland no cystic formation is observed. The gland substance is somewhat redder and more friable than is usual. The upper portion of the right lobe is made up of a somewhat similar mass that is quite distinctly encapsulated, the capsule at some portions having undergone calcareous change. Running through this area and more or less dividing it into lobules are fibrous bands that are at points also calcareous. The substance intervening between the septa is quite red and exceedingly friable, having scarcely more consistence than a recent blood clot. This mass is rounded and about 3 centimetres in diameter.

Specimens from all of the internal organs were fixed in Heidenhain's solution, embedded in paraffin, sectioned, sections stained with hematoxylin alone and with eosin, carmalum alone and with picric acid, toluidin blue alone and with eosin, safranin alone and in combination with *Kernschwartz*, by the methods of Van Gieson, Weigert for fibrin, and by Unna's acid orcein stain for collagenous and elastic tissues.

As no pathologic alteration of moment other than the general carcinomatosis (?) is found in this case, and as the primary tumor appears to have been present in the left kidney, a description of the changes found in this organ will be first given, followed by notes on the microscopic appearances of the tumors in the other viscera in the order of their probable importance.

Microscopic Examination.—As was mentioned in the post-mortem notes, the tumor of the left kidney is surrounded by a distinct fibrous capsule. This capsule is made up principally of collagenous tissue, with an intermixture of elastic fibres, and contains at all points the remains of the original kidney structure. These remnants consist of compressed tubules and distorted Malpighian bodies. The epithelial cells lining the tubules generally show catarrhal change, they having in most instances entirely shed off from their basement membranes, and lie loosely in the lumina of their tubules. The same changes are also observed in the epithelial cells that line the capsule of Bowman surrounding the compressed and distorted Malpighian bodies. It is noteworthy that these epithelial cells,

however, do not show any extreme degree of granular degeneration, but generally stain as, and present the appearance of, normal epithelial cells. In some instances the tubules are so compressed that there is only a single row of cells representing their entire epithelial structure, there being in these cases, of course, no lumina. In all parts of this capsule, but especially toward the out-parts of it where it gradually merges into the surrounding normal kidney substance, a great many lymphoid and plasma cells are found; passing inward toward the tumor these cells become fewer and fewer in number, they being gradually replaced by the so-called fibroblasts and fully developed connective-tissue cells. There are also quite a number of plasma cells lining the inner border of the capsule. It would thus appear that the capsule is being added to, both on its inner and outer surfaces. In all parts of this capsule are quite a number of polymorphonuclear leucocytes, but they are especially numerous as the tumor proper is approached, and are frequently collected together in small masses. In these areas the tissues of the capsule often present beginning necrotic change. There are a great many widely dilated blood vessels in the capsule, all containing quantities of blood. Occasionally small collections of the peculiar nucleated masses that make up the tumor, presently to be described, are found within the capsule, there being under these circumstances probably a metastatic extension of the tumor from the primary growth. It is quite evident that this process has frequently recurred during the growth of the tumor and that comparatively large new formations have developed around the site of the primary focus of the disease. As a result, bands of fibrous tissue frequently intervene between the neighboring tumor masses, though it is probable that they communicate with each other in most instances. In some of the blood vessels small clots are found which exhibit toward their central portions minute masses of the structures that make up the tumor.

The tumor proper is a curious combination of cord-like masses which greatly resemble in their composition the syncytium of the chorionic villi, along with collections of both normal and partially disintegrated blood surrounding them (Fig. 3). At some points, however, the masses are attached to the fibrous capsule, and under these circumstances have blood in contact with them on only one side. These masses superficially resemble very greatly the normal chorionic villi, occurring as they do in long, villous, stringy masses that lie

scattered throughout the tumor in varying numbers, but they differ from them in that they contain no blood vessels or other mesodermal tissues. They vary in diameter from 10 to 180 μ ; they are never uniform in size for any great distance, but show very marked swellings at some points and at others becoming very much attenuated. They are never straight, but curve around in such a way that they very much resemble



FIG. 3.—Section of the tumor of the kidney. Bausch & Lomb 1 inch eyepiece, $\frac{3}{8}$ inch objective. *a*, syncytial masses containing Langhans cells, *a* and *b*; *c*, syncytial masses the nuclei of which have disappeared; *d*, syncytial masses infiltrated with leucocytes; *e*, intervillous spaces filled with disintegrating blood.

the roots of trees. It is noteworthy that the processes never make sharp angles, but always bend in such a way as to form graceful curves. These bands, under low powers and with the ordinary stains, show embedded within them a great many basophilic bodies that present the appearance of being the nuclei of cells. Under higher powers it is noticed that in

addition to the nuclei there are a varying number of vacuoles. These vacuoles are most numerous toward the central portions of the villi, but in some instances they are almost entirely free from them; in the outer portions the vacuoles are quite frequently entirely absent. Specimens stained by the method of Van Gieson and examined under a high power show that this peculiar substance is sometimes made up of two quite distinct layers, (1) an outer, and (2) an inner.

1. The outer layer presents an exceedingly delicate network of fibrils that stain yellowish red; the meshes of this network are oval or rounded in form and contain a translucent material that is colored by the picric acid of this combination. Irregularly distributed through this are numerous exceedingly irregular and roughened bodies that take deeply the nuclear stain, and are even colored intensely by the gentian violet of Weigert's fibrin method. They are from 3.5μ to 16μ in diameter, but when oblong they may considerably exceed the latter measurement in length. They are so exceedingly irregular in form that it is impossible to state definitely their average size, but it is probably in the neighborhood of 7 to 8μ . These nuclei are extraordinarily rich in iron. One to three nuclei are always present within them. It is highly probable that the material in which these nuclei lie has been secreted by them.

2. The inner layer of these masses, when it exists, stains more darkly than does the material that surrounds it. Even under low powers it is observable that this is not so homogeneous in character as is the outer layer, there being within it numerous very large vacuoles, many of which contain deeply staining nuclei; these bodies do not appear to contain chromatin to such an extent as do the nuclei in the neighboring parts. With a high power it is at once evident that the ground substance lying between the vacuoles is by no means homogeneous, but that it is composed of a network of fibrils that are stained almost red by the mixture of Van Gieson. Lying upon this network there is a material that stains almost uniformly yellow by the same method. On critical examination the basophilic bodies lying in the vacuoles prove to be the nuclei of cells. These cells are oval or rounded in form, and measure from 12μ to 20μ in diameter. They contain irregular nuclei, within which a nucleolus may sometimes be detected. Surrounding the nuclei there is a varying amount of acidophilic protoplasm, and external to this a capsule is

generally present. In preparations hardened in absolute alcohol and stained in Lugol's solution, glycogen is found to be present in the protoplasm of the cells. No evidence of mitosis was ever seen.

In some instances these cells have evidently undergone degenerative change, as the nuclei have entirely disappeared and the cell body remains as a faintly granular acidophilic

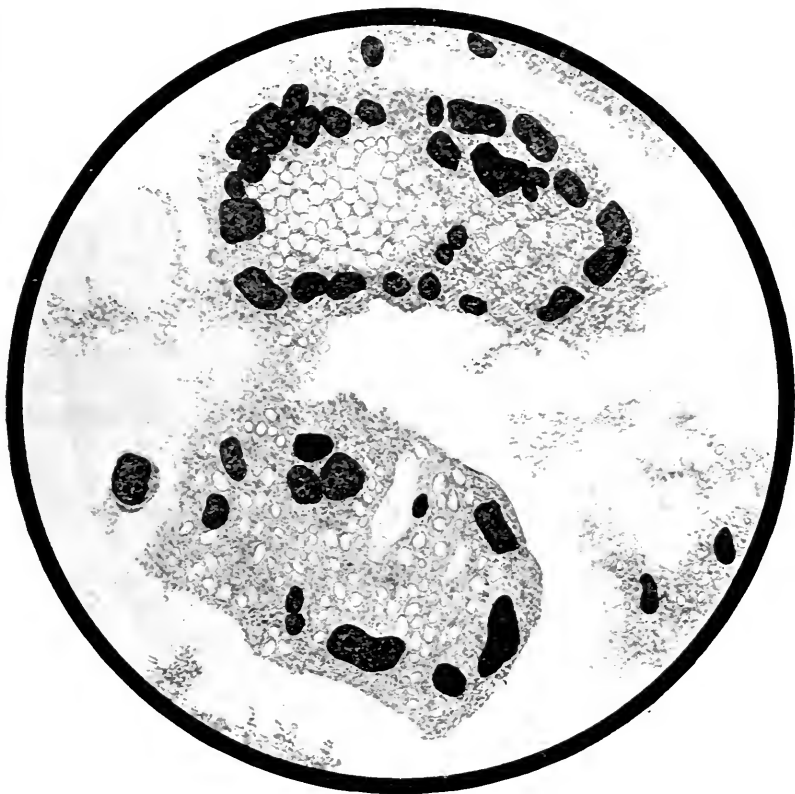


FIG. 4.—Specimen from the tumor of the kidney, highly magnified. Zeiss B eyepiece, $\frac{1}{12}$ inch oil-immersion objective.

mass. The vacuoles by no means always contain the cells to which reference has just been made, for not infrequently there are present within them well-preserved red blood corpuscles, and occasionally polymorphonuclear leukocytes; in many instances they are entirely vacant (Fig. 4).

From the foregoing description it can scarcely be doubted that the outer portion of these villous masses is composed of

syncytium, and that the inner layer contains the cells of Langhans (Fig. 5).

In all of the older tumors syncytial masses are found frequently in a degenerate condition. Under these circumstances the nuclei of both layers gradually break up and cease to take

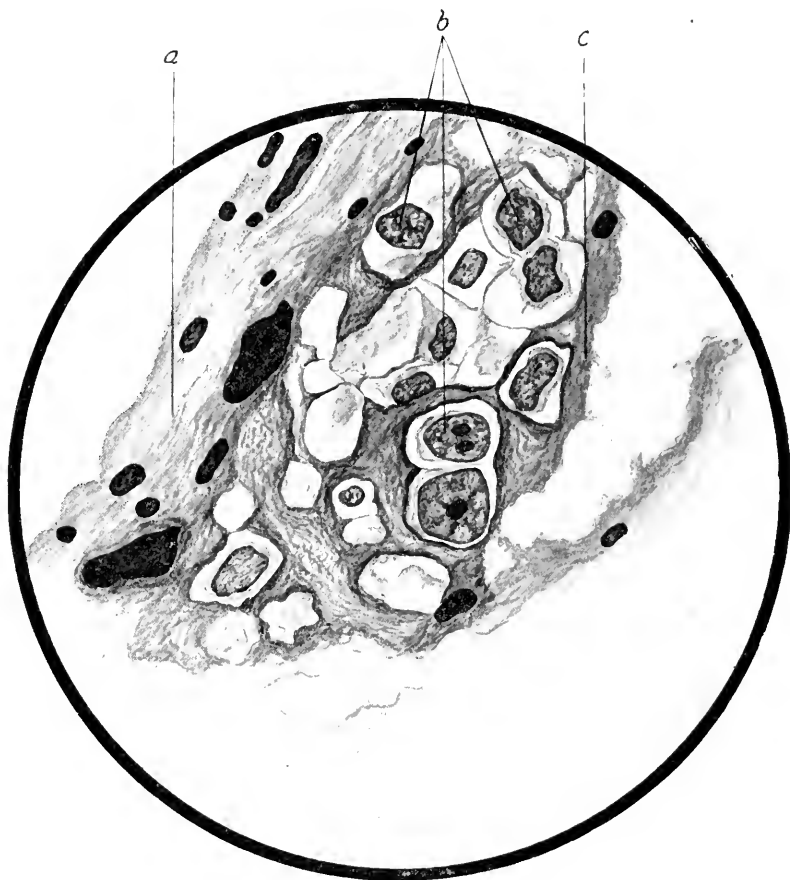


FIG. 5.—Specimen from the tumor of the kidney, highly magnified. The tissue was fixed in the mercuric chloride solution of Hedenbain, embedded in paraffin, and stained by the method of Van Gieson. Zeiss B eyepiece, $\frac{1}{12}$ inch oil-immersion objective. *a*, outer layer of syncytium; *b*, inner layer containing the cells of Langhans.

the stain, and there remains a mass of material that greatly resembles the hyaline substance found in the tubules of the thyroid gland. At a still later stage this material is permeated by the blood that always surrounds the villi, and may soon thereafter entirely disintegrate. In some instances, even before all of the nuclei disappear, the masses are infiltrated to a

remarkable extent by polymorphonuclear leukocytes; following this they undergo degenerative change and finally entirely break up.

Surrounding these syncytial masses, except where they are attached to the capsule, there are great quantities of blood, in some instances apparently entirely normal, and in others presenting all stages of degeneration. Mixed with the red blood cells there are great numbers of polymorphonuclear leukocytes, which in some situations are collected in distinct masses. Scattered through these masses of blood is also quite a quantity of fibrin, which, inasmuch as it takes but very faintly the fibrin stain of Weigert, appears often itself to be in a degenerate condition. These blood masses in many situations make up by far the greater portion of the apparent tumor; in the older areas this is especially marked, and it seems not improbable that the syncytial masses have under these circumstances undergone necrotic changes and have in a large measure disappeared.

The epithelial linings of the tubules of the cortical portion of this kidney universally show marked degenerative change. The cells have swollen, become exceedingly granular, and their nuclei have very generally lost their power of taking basic stains. It thus appears that a catarrhal nephritis was in progress in this kidney at the time of death. The cortical tubules of the right kidney show similar alterations.

The Brain.—As mentioned in the postmortem notes, numerous secondary tumors are present throughout the cerebrum, and one was found in the cerebellum. On microscopic examination they are found in every particular to resemble the tumor of the left kidney. The syncytial masses were evidently carried by means of the blood current to the brain tissues, and, lodging in some of the smaller capillaries, they have attached themselves to the walls of these vessels and have rapidly increased in size; subsequently the walls of the blood vessels have evidently been broken through and the surrounding nerve substance has been invaded by the new growth.

The tumors in these situations consist almost exclusively of partially disintegrated blood, lying in the central portion of which, and entirely unconnected with the surrounding nerve substance, are the syncytial masses which have been so frequently referred to. It is noteworthy that the brain tumors contain much more blood than those in other parts of the body. In these situations the tumors have evidently grown with

great rapidity, as a result of the fact that the blood has rapidly infiltrated into the nerve substance, pushing it aside and causing disintegration of the elements that compose it. In the smaller tumors no distinct walls can be made out, the blood of the tumor being directly in contact with the original tissues of the part. In the older tumors a more or less well-defined wall of fibrous tissue is present, containing, in addition to the remnants of the nerve substance, quite a number of lymphoid and plasma cells. The capsules around these tumors are never thick, being evidently of recent development. Around the edges of the older tumors there are a great many small, rounded or oval cells of a diameter from 10 to 15 μ . They contain in great abundance a golden-yellow pigment. These cells have small, faintly staining nuclei in most instances, though in quite a number of cells no distinct nucleus can be made out; the nuclei always lie eccentrically. On observing these cells closely with a high power, it is found that their protoplasm is not uniformly filled with pigment, but that in most instances it is collected here and there in small rounded masses, and frequently it is perfectly clear that this consists of red cells in a state of partial disintegration. The pigment in most of these cells gives a faint reaction for iron. Within the protoplasm of some of the cells as many as six to eight red blood corpuscles can be distinctly seen. There can be no doubt that these cells are the large phagocytes of Metschnikoff.

No alterations were found in the tissues of the spinal cord.

With the exception that the blood vessels were distinctly dilated and filled with blood, no changes were noticed in either of the optic nerves or in any of the structures of either eye.

Sections of the small tumor-like masses of both lungs show that they histologically correspond to the tumors occurring in the brain and kidney, but differ from them principally in the fact that they contain less blood, though this substance still comprises a considerable proportion of the entire tumor. Further than this, there is absolutely no difference between these new formations and those occurring elsewhere. In the tissues surrounding the larger tumors in the lung there is present a very slight capsule of fibrous tissue, in which are lymphoid and plasma cells and also a certain number of polymorphonuclear leukocytes. At the borders of these capsules, and lying between them and the tumor, there are many phagocytes with red blood cells within their protoplasm in all stages of disintegration. In the lung tissue surrounding the tumors quite a

degree of inflammatory change may be frequently observed; the epithelial cells of the alveolar walls have entirely shed off, and there are in many instances, in addition, collections of polymorphonuclear leukocytes and red cells in the lumina of the air vesicles to such an extent that they are completely filled. It is universally the case that the smaller capillaries of the alveolar walls surrounding the tumor are greatly dilated, and

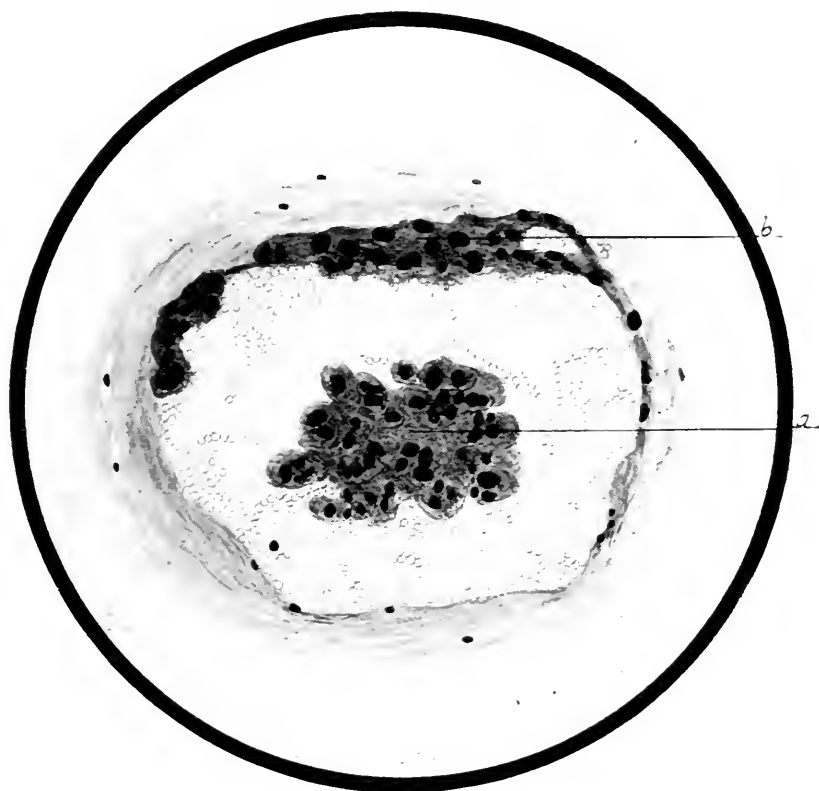


FIG. 6.—Section from one of the smaller branches of the pulmonary artery. 1 inch eyepiece and $\frac{1}{2}$ inch objective. *a*, syncytial mass in the centre of the vessel; *b*, syncytial mass penetrating the wall of the artery.

in quite a number of instances blood vessels within the lung are seen to contain thrombi in which are embedded a mass of the syncytial material similar to that which is present in all of the tumors (Fig. 6). In some instances the masses are present in the lymphatics around the vessels; under these circumstances the walls are gradually absorbed and the blood finds its way into the surrounding tissues. This process strikingly resembles that which has been recently described by Peters as

occurring in the tissues of the uterus following the implantation of the impregnated ovum.¹

In both lungs quite extensive areas of simple necrosis are frequently found; in the affected area the lumina of the air vesicles are more or less completely filled with the granular detritus, and the surrounding alveolar walls entirely fail to take the basic stain and are colored only slightly by the acid ones. These areas are sharply defined, and the tissues immediately surrounding them show no change other than that they contain perhaps a few more cells than is usual. It is impossible to definitely state the origin of these areas of necrosis, but it seems highly probable that they have resulted from the plugging of some of the larger blood vessels of the part by the syncytial masses.

The Liver.—Only one nodule was found in the liver, and it in every way exhibits the same peculiarities that are shown by the tumors in other situations. Around the edges of this tumor numerous phagocytes are found which contain red blood cells. External to this are the liver tissues, which, when immediately surrounding the tumor, exhibit marked degenerative change. The liver cells in these situations are considerably atrophied and their protoplasm is granular; between the cells the capillaries are enormously dilated and communicate directly with the blood that forms part of the tumor. Between the liver cells immediately in contact with the tumor there are here and there small collections of lymphoid and plasma cells, and in these situations a few fibrils of connective tissue are occasionally found. The tumor, however, cannot be said to be distinctly encapsulated.

On examining the nodules in the thyroid it is found, as stated in the postmortem notes, that they are surrounded by a distinct fibrous-tissue capsule. Within this capsule the entire substance of the masses is composed of dilated tubules filled with a hyaline substance similar to that found in the normal gland ducts, and a few blood vessels. In several small arteries thrombi are present, within which are syncytial masses resembling in every way those found in the other viscera. In one instance the blood vessel has ruptured and the tumor is infiltrating into the neighboring structure.

Sections of the spleen, pancreas, adrenals, aorta, and lymphatic nodes, from the omentum and from around the bronchial tubes, are found to present no abnormalities.

¹ Peters: "Die Einbettung des menschlichen Eies." Leipzig u. Wien, 1899.

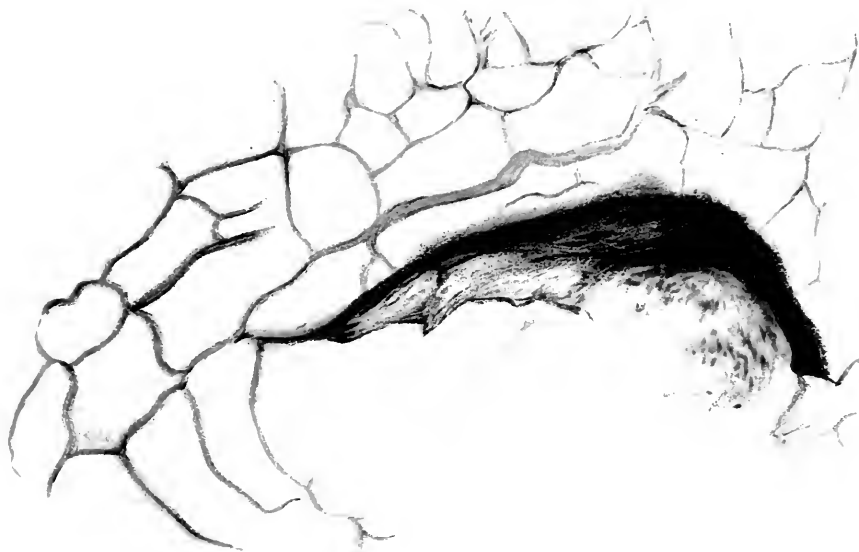


Fig. 1. Tumor of the Brain.



Fig. 2. Kidney Enlarged by Syncytial Growth.

Sections from the uterine mucosa show the tissues to be entirely normal.

Although a careful search was made, no bacteria or other low forms of animal or vegetable life were found. Inoculations made on various media from all of the tumors remained sterile.

Perhaps the most remarkable feature of this case is the entire absence of pathologic change in the uterus. This, however, is not unprecedented, since a case has been recorded by Schmorl¹ in which, although the uterus was normal, undoubted syncytial tumors were present in the kidney, lungs, liver, and intestines of a woman who had died as a result of the general involvement of the viscera by the new growths. As in quite a large proportion of cases the disease has followed hydatid mole, and as these tumors are sometimes discharged without leaving any lesion of the uterus, it seems not improbable that this may have occurred in this instance, metastasis having begun before the tumor was expelled. A less probable theory is that some of the normal chorionic villi were broken off from the chorion, and, being carried to distant parts of the body, have then begun to grow and have developed the peculiar properties that characterize malignant neoplasms.

On reviewing the microscopic findings in this case the impression is strongly conveyed that we are dealing with an unusual and very peculiar form of parasitism. The universal dissemination of the peculiar syncytial masses throughout the entire body, the rapid dissolution of the tissues with which the new formation came in contact, the hemorrhages into the tissues, and the presence of multitudes of large phagocytes and polymorphonuclear leukocytes, all go to make up a picture that is familiar to every pathologist in connection with infective processes.

An examination of the recent literature upon the pernicious nausea of pregnancy, of which a bibliography is appended, informs us that many writers upon the subject now consider pernicious nausea as a complex neurosis. Although most cases have some pelvic lesion as a starting point, there remain others in whom this condition is never present. We do not, however, find reference to a case of pernicious nausea in which syncytial growth was a factor.

In Case 1 we had the combination of ectopic gestation and pernicious nausea. Here the condition of the pelvic organs

¹ Schmorl: "Demonstration eines syncytialen Scheidentumors." Vers. d. Naturforscher u. Aerzte in Braunschweig. Ref. Centralbl. f. Gyn., 1897, No. 40.

was rendered abnormal by the cornual pregnancy. Whether this case is unique in the literature we cannot positively assert, but we have not found its parallel.

BIBLIOGRAPHY.

- AHLFELD: *Centralblatt für Gynäkologie*, 1891, p. 330.
 ANTOUCHERVITCH, GEOFFREY: Twelfth International Congress, Moscow.
 BACON: *American Journal of the Medical Sciences*, June, 1898.
 BERILLON: *Archives de Tocologie et de Gynécologie*, Mars, 1893.
 CHARPENTIER: *Archives de Tocologie et de Gynécologie*, Aout, 1895.
 DAVIS: Paper and discussion, *American Gynecological Society*, 1894.
 DORFF: *Centralblatt für Gynäkologie*, No. 17, 1897.
 DOUMER: *Le Nord Méd.*, May 15, 1897.
 DRAPER: *Provinc. Medical Journal*, 1891, p. 410.
 EULENBERG: *Deutsche med. Wochenschrift*, 1895, p. 140.
 FROMMEL: *Centralblatt für Gynäkologie*, No. 16, 1893.
 GAUTIER: *Archives de Tocologie et de Gynécologie*, January, 1895.
 KEHRER: *Centralblatt für Gynäkologie*, 1896, No. 15.
 KLEIN: *Zeitschrift für Geburtshülfe und Gynäkologie*, Bd. x., H. 4, 1899.
 LANG: *Archives de Tocologie et de Gynécologie*, Aout, 1893.
 LEDER: *Archives de Tocologie et de Gynécologie*, Mai, 1896.
 LOVIOT: *Archives de Tocologie et de Gynécologie*, Avril, 1895.
 MADER: *Wiener klin. Wochenschrift*, 1895, Nos. 30 and 31.
 POZZI: *Annali d'Ostetricia e Ginecologia*, May and June, 1897.
 REYNOLDS: *Boston Medical and Surgical Journal*, June 2, 1898.
 SOLOWIEFF: *Centralblatt für Gynäkologie*, 1892, p. 492.
 STEMBO: *Deutsche med. Wochenschrift*, 1895, p. 461.
 WINDSCHEID: *Neuropathologie u. Gynäkologie*, Berlin, 1897.

SELECTED TOPICS IN CONNECTION WITH THE PATHOLOGY
OF DELIVERY.¹

BY

J. CLARENCE WEBSTER, M.D.,

Professor of Gynecology and Obstetrics in Rush Medical College; Gynecologist
and Obstetrician to the Presbyterian Hospital,
Chicago.

(With five illustrations.)

THE subject on which I have been asked to deliver the address introductory to our obstetrical symposium on this occasion is one of such enormous extent that it would be im-

¹ The papers of Drs. Webster, Allaben, Percy, Lewis, Bacon, Reed, and Kreider were read at the recent meeting of the Illinois State Medical Society, as a symposium on Obstetrics, before the Gynecological Section under the chairmanship of Dr. Denslow Lewis.

possible, in the time allotted to me, to do justice to it, even though it were considered only in a general way. I think it will be more profitable to select certain topics having a bearing on the papers to be read immediately, giving prominence to special features that appear to me of particular importance.

Anomalies of the Hard Passage.—Under this heading are included all variations from the normal type of bony pelvis. The complications in labor associated with these conditions are among the most important in the whole field of obstetrics. In Europe much more attention is given to their consideration than in America, because it is generally believed that pelvic deformities are much more common there than here.

In the light of recent work it is doubtful if this widely held view is correct. In both continents it is very difficult to get accurate data regarding the frequency of their occurrence. This is due to the fact that there is an absence of a common understanding regarding the definition of deformity. Thus, both in Europe and America, many observers have neglected minor degrees of contraction, considering only those capable of causing serious troubles. Statistics vary also according to the expertness or fitness of different observers in recognizing deformities.

In this connection the recent work of Williams and Dobbin, of Johns Hopkins, is worthy of the most careful study. Their observations are a direct challenge to those who hold the common belief regarding the infrequency of pelvic deformity in America. It is their view that deformities are considered rare only because they are not systematically looked for by the routine examination and measurement of all pregnant and parturient women. In 1,000 cases of labor observed by them there were 131 contracted pelves, or 13.10 per cent. Of this number 46, or 35.11 per cent, were of such a degree as to necessitate operative delivery. It is interesting to compare these figures with those of Winckel, who states that 10 to 15 per cent of all child-bearing German women have contracted pelves, but that only in 5 per cent is the contraction serious enough to be noticed. The percentage of operative frequency in Europe is variously noted by different workers. Knapp puts it at 61 per cent; Heinsius, 56.84 per cent; Ludwig and Savor, 45.6 per cent; Bosmann, 24.5 per cent; Franke, 20.5 per cent. In America the largest percentage is that of Flint, of New York, viz., 46. The well-known statistics of Reynolds, of Boston, are not at all reliable with regard to the frequency of all

degrees of pelvic deformity, for, of the 2,127 cases studied by him, measurements were made practically only in those in whom operative delivery was carried out.

Williams and Dobbin have shown that such a method of inquiry can result only in the non-recognition of a considerable number of deformities. This was demonstrated by their

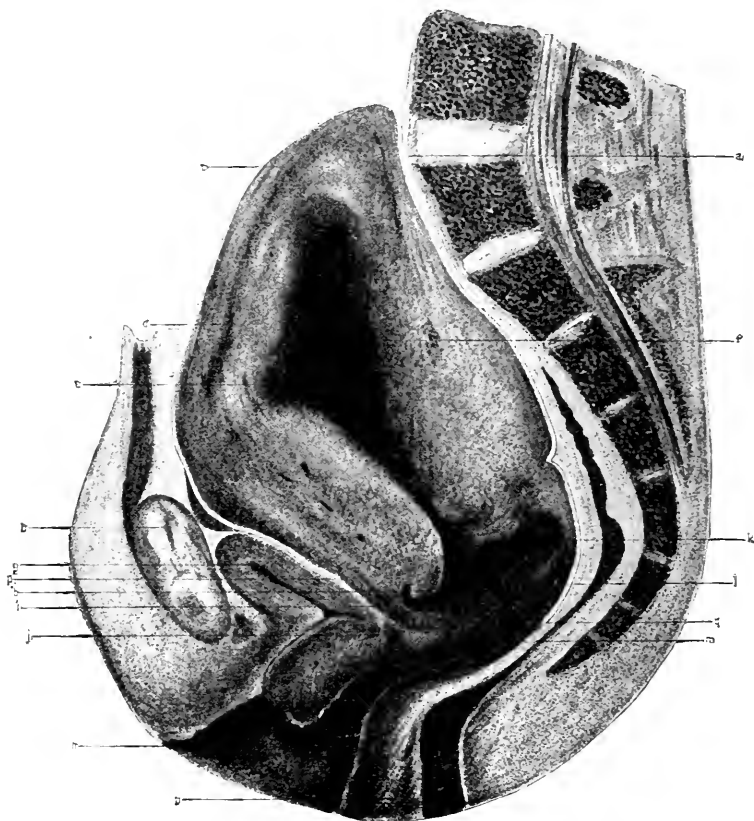


FIG. 1. *First Day of Puerperium. Five minutes after delivery. Vertical mesial section.* a, promontory; b, symphysis pubis; c, fundus uteri; d, closed sinus in uterine wall; e, uterine cavity containing some blood; f, placental site; g, bladder; h, retraction ring; i, lower uterine segment; j, anterior fornix; k, cavity of uterus above cervix; l, cervix; m, upper part of vagina; n, lower part of vagina; o, perineum; p, utero-vesical pouch; q, pouch of Douglas. (Webster.)

careful study of negro women. They found that pelvic contractions were much more frequent among these than among white women. Yet, on account of the small and easily moulded fetal head, the degree of contraction is rarely sufficient to obstruct labor to a serious degree. Therefore, if only those cases

were considered in which operative interference is necessary, a considerable number of deviations from the normal would be overlooked.

The most frequent contractions met with in practice are the following:

1. The justo-minor or universally contracted pelvis.
2. The flat non-rickety and rickety.
3. The funnel-shaped pelvis.
4. The pelvis altered by various spinal deformities.

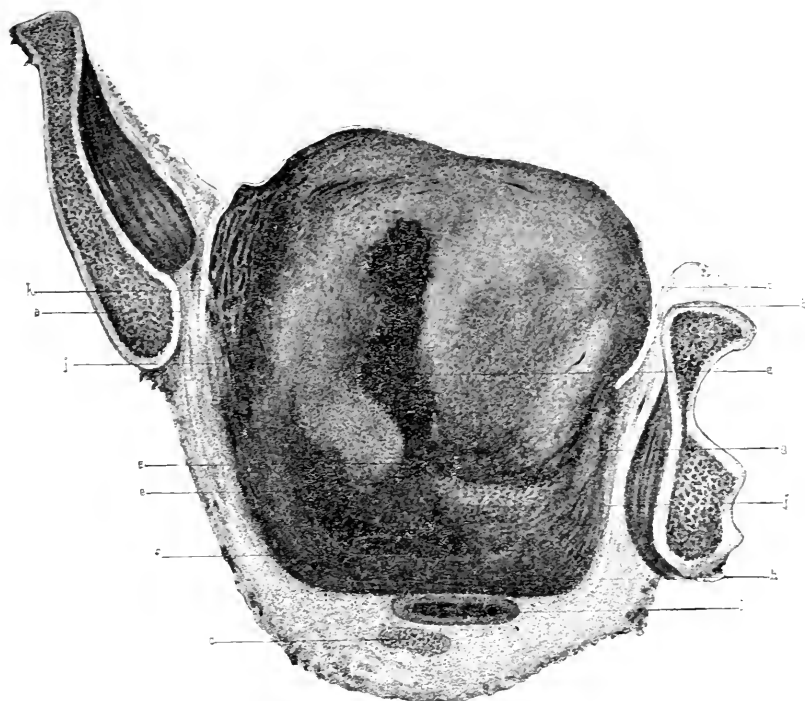


FIG. 2. *First Day of Puerperium.* Vertical oblique section. Face of posterior slab. The section is made at right angles to the brim, passing almost through the plane of the right oblique diameter. *a*, right ilium immediately in front of sacro-iliac joint; *b*, left ilio-pectineal eminence; *c*, junction of second and third coccygeal vertebrae; *d*, uterus; *e*, uterine cavity; *f*, cervix; *g*, closed vessels in uterine wall near parametrium; *h*, vagina; *i*, rectum; *j*, ureter; *k*, peritoneum. (Webster.)

Of these perhaps the most common are the universally contracted and the flat.

Regarding the treatment of labor delayed in cases of these deformities, it is interesting to note a recent deviation from the methods most generally employed. For many years the aids to delivery, within certain limits of contraction, have been, in

the case of the justo-minor pelvis, forceps extraction; and in the case of the flat pelvis, extraction after version. The *rationale* of these methods of treatment is as follows: In the mechanism of labor in a justo-minor pelvis the head undergoes extreme flexion. The action of forceps is to promote the

normal flexion, while version tends to produce an extension of the head. Consequently the latter manipulation is contraindicated. In the mechanism of labor in a flat pelvis, extension and not flexion is a prominent feature, and, consequently, extraction by turning is a logical mode of delivery. Moreover, it was long believed that the application of forceps to the fetal head, lying as it does, in the case of the flat pelvis, with its long diameter in the transverse of the pelvic brim, grasping the face and occiput, must by compression produce a compensatory transverse bulging, which, being in relation with the shortened conjugate of the brim, would only produce a greater obstacle to safe delivery.

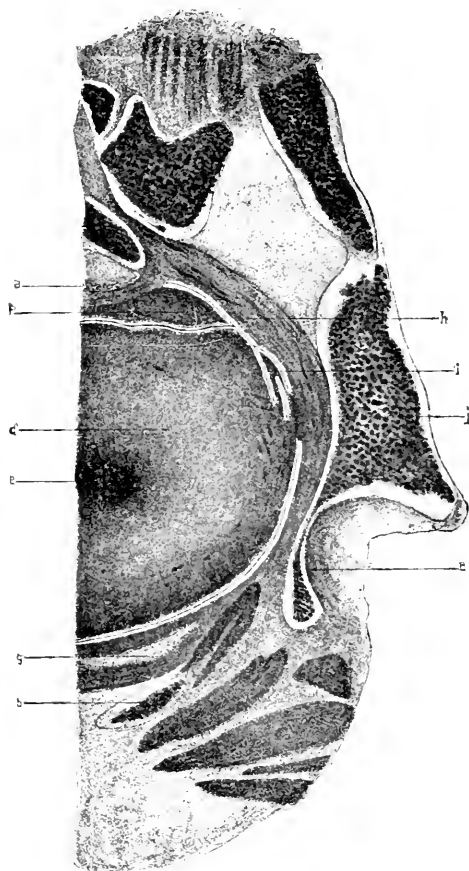


FIG. 3. *First Day of Puerperium.* Transverse section. Left half. Face of lower slab. *a*, upper margin of third sacral vertebra; *b*, left descending ramus of pubes, immediately below symphysis; *c*, left acetabulum; *d*, uterus; *e*, uterine cavity; *f*, rectum; *g*, bladder; *h*, ureter; *i*, fold of posterior layer of left broad ligament; *j*, broad-ligament tissues with closed vessels compressed by uterus. (Webster.)

Recently Milne Murray, a distinguished obstetrician of the Edinburgh school, who has done an important service in perfecting the axis-traction forceps, has strongly urged the use of

this instrument instead of version in the delivery of the head in flat pelvis. In a series of experiments he has shown that the diminution of the head in the occipito-frontal diameter is accompanied by a compensatory bulging, *not in the transverse*, but in the vertical diameter, and that, therefore, a serious objection to the use of the forceps is removed. By a simple

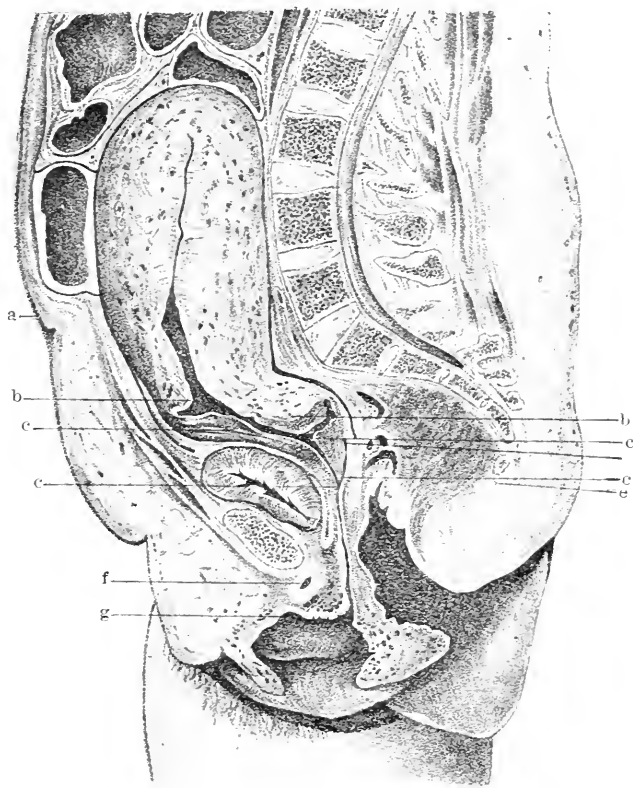


FIG. 4. *Vertical Mesial Section of a Contracted Pelvis*, from a woman who died a half-hour after delivery, of postpartum hemorrhage. *a*, umbilicus; *b*, retraction ring; *c*, cervix; *d*, posterior fornix; *e*, lip of coccyx; *f*, urethra; *g*, urethral orifice. (Stratz.)

and ingenious modification of the axis-traction forceps he has made it possible in these cases to make the line of traction coincide more accurately with the altered axis of the inlet than is possible with the ordinary axis-traction forceps. He and others have reported a number of cases in which his method has been successful in delivering a living child where marked contraction of the inlet existed. At the meeting of the British

Medical Association in 1896 he mentioned one instance in which he had been successful where the brim conjugate measured 2.75 inches.

That this method of delivery in flat pelvises is a distinct advantage over version is the testimony of all who have adopted it. The risk to the mother is decidedly less, and the chances of getting a living child are greatly increased. The necessity for performing craniotomy or symphyseotomy in such cases must also be considerably diminished.

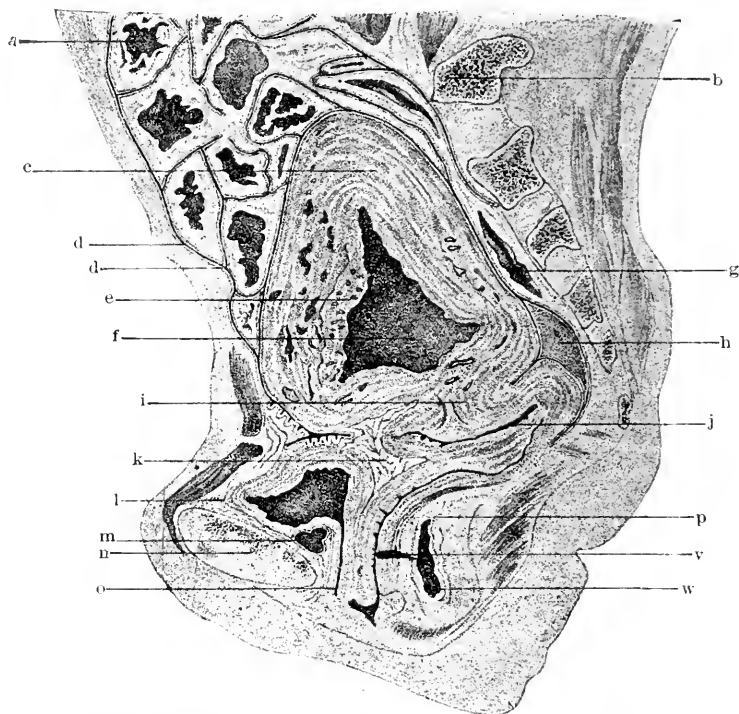


FIG. 5. *Vertical Mesial Section of a Kyphotic Pelvis*, from a woman who died one and a half hours after delivery, of postpartum hemorrhage. *a*, intestines; *b*, last lumbar vertebra; *c*, uterus; *d*, peritoneum; *e*, placental site; *f*, uterine cavity; *g*, rectum; *h*, pouch of Douglas; *i*, cervix; *j*, cervical canal; *k*, cellular tissue; *l*, bladder; *m*, vein; *n*, symphysis pubis; *o*, urethra; *p*, cellular tissue; *v*, vagina; *w*, anus. (Barbour.)

Anomalies of the Bony Pelvis in relation to the Postpartum State.—That a deformed pelvis may exert a marked influence on the character of the postpartum state is not generally recognized; yet careful observations show that the relationship is one which cannot be ignored, and it may not be considered out of place if I draw your attention to the subject for a few moments.

Some years ago it was my good fortune to be able to investigate the cadavera of a number of women who died at various periods in the puerperium, of conditions not affecting the normal relationships of the pelvic contents. I was able by means of frozen sections to describe accurately, for the first time, the topography of the puerperal pelvis. My sections showed that in the normal state, immediately after the third stage, the retracted and contracted uterine body fills the greater part of the pelvic cavity and compresses the extrauterine tissues, this compression being especially marked between the uterus and the bony wall, and to a much less extent inferiorly owing to the softening and relaxation of the fascial and muscular tissues of the floor of the pelvis. In consequence of this arrangement the circulation of the blood in the extrauterine pelvic structures is considerably interfered with, those parts inferior to the body of the uterus—viz., the cervix, vaginal walls, perineum, and subpubic tissues—being congested, while those tissues compressed between the pelvic wall and uterine body are anemic, many of the vessels being closed or nearly closed. In the uterine body itself there is marked anemia owing to the compression of vessels by the retracted and contracted musculature. This condition of things lasts for the first four days of the puerperium. Both as a result of the state of the uterus and of the compression of extrauterine tissues by the organ against the pelvic wall, bleeding from its inner surface is greatly interfered with, while a marked influence is exerted by the greatly altered circulation in the direction of initiating or assisting the retrogressive changes which cause uterine involution. Further, the condition of the cervix and vagina helps us to understand why after labor there is so often bleeding as a result of tears, and why, if the laceration has extended into the paracervical and paravaginal tissues so rich in venous sinuses, there may be very severe hemorrhage.

During several years I have made careful observations regarding postpartum hemorrhage in cases of normal and abnormal pelves, and I have found it to be most profuse and most difficult to check in women with abnormally large pelves and in those with abnormally contracted pelves. Of the former I may mention the justo-major or universally enlarged, and the kyphotic in which the upper part of the pelvic cavity is much increased; of the latter I may mention the rickety pelvis. The explanation of these facts is very evident from the study of cadavera. Barbour, of Edinburgh, has pub-

lished an interesting case of a kyphotic woman who died one and a half hours after delivery, of postpartum hemorrhage, and his sections of the frozen body show that the uterus in no way acts as a plug to the large size of the upper part of the pelvic cavity, the extrauterine tissues being markedly congested, the large vessels dilated—conditions all favorable to excessive bleeding. On the other hand, in the case of a well-marked contracted brim, as is shown by Stratz's section of a rickety woman who died of postpartum hemorrhage one-half hour after delivery, the uterus cannot sink down into the pelvis, the cervix, vagina, and extrauterine pelvic tissues being thereby allowed to become enormously congested.

The Use of Forceps.—The remarks made by me in considering the subject of delayed labor in flat pelvis lead me to say a few words further in regard to the use of forceps. It will be noted that I have referred only to the axis-traction instrument, and not to the ordinary long forceps. In such a connection mention of the latter would be entirely out of place. For them there is no such triumph as that which has been demonstrated for the axis-traction forceps. Successful delivery of a head lying above the brim of a flat pelvis with a true conjugate of 2.75 inches must, indeed, be impossible with the ordinary long forceps, unless the head be abnormally small. It is in such a difficult obstetrical case that the overwhelming advantage of the axis-traction instrument is best demonstrated. Such a form as that devised by Milne Murray gives a maximum of advantage in traction and a minimum of waste of power and of danger to maternal and fetal tissues. It is impossible to conceive an instrument more nearly scientifically accurate. When the long forceps is used traction is accompanied with dangerous compression of the fetal head, all the more serious because of the antero-posterior grip, and in the effort to deliver the fetus in the proper axis unnecessary force is expended and is lost in the shape of pressure against the maternal parts.

But it is not only in such a pelvic deformity as that which I have considered that the axis-traction forceps is the best instrument. I wish to urge its supremacy in every circumstance where instrumental delivery is indicated, not only in cases where the head lies above the brim, but where it lies in the pelvic cavity. In the latter instance, as in the former, the traction power is expended with the least loss of energy and there is a certain guide as to the manner in which it should be

exercised. I know the ordinary criticism made by those who have used the long forceps, viz., that they have often enough been successful with it. Such a remark is on a par with that made by the man who says that he enjoys a ride on an old-fashioned velocipede and does not understand why he should change to the latest improved bicycle; nor will he understand until he has made a thorough comparison of both machines.

It is a striking fact that in Great Britain and France, the two countries in which the most important transformations in the evolution of the forceps have been made, the latest development—the axis-traction principle—has found most acceptance. In America, where in every department of life the greatest readiness is evinced in the adoption of improved mechanical devices, there has been exhibited the greatest tardiness in the employment of axis-traction forceps in the practice of obstetrics. Two years ago, while inspecting one of the leading maternity hospitals in the East, in which a large number of complicated cases are delivered, I was surprised to find that there was not a single instrument of this kind in the establishment. I could name a number of similar institutions in Europe where no other forceps is used.

The objection raised by many that the instrument is a complicated one and can only be satisfactorily used by skilled experts who have a large operative experience, is of no weight whatever. The mechanics of the forceps may be learned in a short time by any one who takes a little trouble, this knowledge being essential to a proper understanding of the application of the instrument. In a well-conducted course of practical obstetrics every student in a medical school should, by practice on the manikin, be able to prepare himself for successful work in his after-professional career. Indeed, as so many cases in which the axis-traction forceps may be of greatest use occur in places where the physician is not within reach of expert help, it is imperative that he should know how to employ the instrument, just as he must be prepared to perform any important surgical operation in case a serious emergency should arise.

The Walcher Position.—In 1889 Walcher pointed out that by placing a pregnant woman on her back on a table and allowing her legs to hang over the edge so that the feet do not touch the floor, the conjugate of the brim is increased about three-eighths of an inch on the average. In non-pregnant

women the increase is only about three-sixteenths of an inch. The change is brought about by a tilting downward of the ossa innominata by the weight of the legs, whereby the pubic symphysis is moved further away from the promontory. In the most common forms of brim contraction, viz., the justo-minor and flat pelves, the small increase makes more easy the delivery if forceps are to be employed, and in some cases may make a safe passage possible when without it embryulcia, symphyseotomy, or Cesarean section might be called for. Moreover, in normal pelves where the head is delayed at the brim owing to its abnormal ossification, its large size, or to an occipito-posterior position or face presentation, the Walcher posture may give extra space, sufficient to allow of a natural or assisted delivery. Then, in cases where the head is stuck above the brim in a breech case or after version, a similar advantage is gained.

Another important gain in connection with the delivery of the head at the pelvic outlet is the relaxation of the perineal tissues. In all cases of labor this is of the greatest value in diminishing the risk of laceration. The positions which are most disadvantageous as regards the preservation of the perineum are the lithotomy and the lateral, the thighs being well flexed toward the abdomen. In cases of small vulvar orifice, when the forceps is applied to the head at the brim, there is in either of these positions a tendency to undue pressure backward against the perineum. This is very much lessened by the Walcher posture.

Indications for the Use of Axis-traction Forceps.—It would be unsatisfactory to mention in detail the many conditions in which the instrument should be employed. In general they may be referred to as follows:

I. In delayed labors due to:

(a) Faults in the powers.

1. Essential—the uterus.
2. Accessory muscles.

(b) Faults in the passenger.

1. Slight enlargement or marked ossification of the fetal head.
2. Certain malpositions and malpresentations.

(c) Faults in the passages.

1. Soft parts.
2. Hard canal.

II. In dangerous labors due to:

(a) Maternal complications, *e.g.*,

Heart disease, pneumonia, etc.

(b) Fetal complications, *e.g.*,

Some cases of prolapsus funis, dry labors, etc.

In particular I desire to refer only to certain conditions found in connection with the hard canal.

It is very evident that in the most common pelvis with contracted conjugate—viz., the universally contracted and the flat—the use of axis-traction forceps in Walcher's position makes it possible to deliver a living child below the limits hitherto believed to be within the range of safe accomplishment. Thus it has been widely held that, with a conjugata vera of less than $3\frac{1}{4}$ inches, successful forceps delivery may rarely be expected. With the axis-traction forceps and Walcher's position there is much more chance of success where it measures 3 inches, or, in the case of a flat pelvis, even $2\frac{3}{4}$ inches. As a result of these improvements it is also clear that the range for the indication of premature delivery in such pelvis may be considerably reduced. Thus many have been accustomed to carry out this procedure with a conjugate of $2\frac{3}{4}$ to $3\frac{1}{4}$ inches—degrees of contraction not incompatible with successful delivery with axis-traction forceps in the Walcher position.

Indications for Performing Version.—The chief indications for performing this method of delivery are as follows:

(a) Maternal.

1. Accidental hemorrhage and placenta previa.
2. Eclampsia and other conditions where a hurried delivery is considered necessary.
3. Flat pelvises.

(b) Fetal.

1. Transverse presentations when the conditions are favorable.
2. Prolapse of the cord in the first stage.
3. Brow and face cases when the head has not engaged, if it is impossible to change them into vertex cases.

With regard to the operation in flat pelvises, it is evident, from what I have already said, that success is to be expected in a wider range of cases where the axis-traction forceps is employed, and that the latter method will probably displace version entirely, or nearly so.

Comparing the relative merits of both methods in flat pelves, it may be stated against version (1) that it introduces the risks connected with breech deliveries, *e.g.*, asphyxiation of the fetus from pressure on the cord, extension upward of head, upper extremities, injury to neck, etc.; (2) that it is impossible to bring down the child in the proper axis of the pelvis after version; (3) that turning becomes impossible or dangerous after the membranes have been for some time ruptured.

In favor of the forceps it may be said (1) that the fetus is not exposed to the risks connected with head-last delivery; (2) that the manipulative risks are not so great as in version; (3) *that forceps can be applied long after dilatation of the cervix and rupture of the bag of membranes*; (4) that the fetus may be withdrawn more nearly in the pelvic axis; (5) that in the widened transverse diameter of the brim the blades of the forceps may usually be applied to the head without great difficulty; (6) that the grip of the head, just sufficient to prevent slipping, does not dangerously compress the head; (7) that the compression produced causes a compensatory vertical and not an antero-posterior bulging.

Indications for Symphyseotomy.—This operation is best regarded as an adjuvant to delivery by the axis-traction forceps. It may therefore be employed, speaking generally, where forceps delivery in the Walcher position is impossible, and where there is no doubt that the increased pelvic measurements resulting from the operation will allow the head to be extracted.

It may be tried:

1. In cases of pelvic contraction. Most authorities mention a limit of 2.6 to 3.2 inches in flat pelves and 3.2 to 3.9 inches in justo-minor pelves. It is evident, however, that the employment of the axis-traction forceps in the Walcher position must make unnecessary, in a considerable proportion of cases, the cutting operation. It is also clear that symphyseotomy at full time must greatly diminish the necessity for inducing premature labor in cases of pelvic deformity. For a living child delivered at term by the axis-traction forceps with the aid of a symphyseotomy is preferable to a premature delivery with its risks and the uncertainty with regard to the rearing of a weakly child.

2. Symphyseotomy also has a place in impacted brow and face cases where delivery cannot be safely carried out with axis-traction forceps and the Walcher position.

3. In cases where the head is abnormally ossified or a little

enlarged and delivery cannot be effected by the axis-traction forceps and the Walcher posture, symphyseotomy is indicated.

Indications for Cesarean Section.—This operation is to be employed mainly in cases of pelvic deformity where delivery of a living child by the methods already considered is impossible. It has also been held by many that it should only be carried out where the child could not be extracted by means of an embryotomy. Nowadays, owing to the tendency to limit this procedure to cases in which the child is dead (or in which hydrocephalus or some other marked pathological condition exists), the sphere for the employment of the Cesarean section tends to be enlarged. It should be employed in all cases of pelvic deformity producing contraction of the brim so that the available or obstetrical conjugate of the brim is $2\frac{1}{2}$ inches or less, in the case of a living child. When the child is dead, craniotomy may be performed with a conjugate of $2\frac{1}{4}$ inches. Section may also be performed in cases where there is marked contraction of the outlet, and in cases where certain tumors of the soft parts or bone or cicatrization of the vagina greatly diminish the parturient canal. The operation may also be carried out immediately after the death of a woman in advanced pregnancy where there is believed to be a healthy living child *in utero*.

The Porro-Cesarean section should be employed (1) where the patient is particularly anxious not to run the risk of a second pregnancy owing to the impossibility of delivery through the vagina; (2) where the uterus or appendages are so diseased as to render probable the necessity for a subsequent operation; (3) where, owing to a prolonged labor in which manipulations have been tried, infection of the uterus has occurred.

Indications for Embryotomy.—At the present time the tendency is to limit the destruction of the fetus to those cases in which it is dead and cannot be delivered by forceps, turning, or symphyseotomy; in case of the living child, to those cases in which some marked fetal abnormality exists, as a large hydrocephalic head, tumors, monstrosity, etc. In cases, however, where a physician is so placed as not to be able to have the Cesarean operation safely carried out, it may be necessary to advise the mother to submit to embryotomy. In view of the modern improvement in the technique of abdominal surgery, whereby the mortality of Cesarean section has been greatly reduced, a physician takes upon himself a grave responsibility in recommending the destruction of the living child.

THE APPLICATION OF FORCEPS.

BY

J. E. ALLABEN, M.D.,
Surgeon to St. Anthony Hospital,
Rockford, Ill.

(With six illustrations.)

THE agents or forces that are responsible for the origin and evolution of the obstetrical forceps may be placed under two general heads:

1. The evolution of the human family to its present stage in civilization.
2. Individual deviation in structure or function, either in the parent or fetus, from a certain type we designate as normal.

Corroborative of the first proposition we have only to point out the fact that the lower we go in the scale of animal life the easier and more simple are the processes of procreation. The ameba reproduces itself by a simple division of its nucleus and protoplasmic mass. In some animals, as the tapeworms, the sexes are combined in one individual and procreation is effected by ova. Higher in the scale the sexes are differentiated, yet procreation is effected on the maternal side by means of ova which are impregnated and developed outside of the body—as illustrated in the fish, the male visiting the spawning ground and impregnating the eggs. In the frog species the male fastens himself to the female's back in a tonic spasm and impregnates the spawn as it leaves her body.

But in these processes of procreation there is nothing that approaches the almost tragical processes of that function we call labor in the human species. When we ascend to the class *aves*, or birds, however, we have the first suggestion of it. Here the ovum or egg has been impregnated within the maternal body, it is protected by an outer coating of unyielding substance, and has attained a size apparently out of proportion to the size of the canal it must traverse in reaching the outside world. But even with these features, conflicting to some degree with easy delivery of the egg, there are two features

that stand out plainly in contrast when compared with labor in a higher class of animals—the mammalia, for example. These features are:

1. Absence of interference from bony structures.

2. The architectural features of the egg tend to facilitate to the highest degree its delivery by mechanical, *i.e.*, muscular, force—a feature entirely absent in the higher mammalia.

In the egg's shape is represented one of the potent forms of mechanical force, *viz.*, the wedge. An egg is a cone-shaped wedge. Place this cone-shaped wedge in an elastic canal with a moderate continuous force behind it, and that canal will dilate to a point equal to the greatest diameter of the wedge, which will gradually traverse the canal its entire length.

In oviparous animals there is no part of the bony skeleton that interferes with parturition. Mammalia, however, in which class man is included, are viviparous, with one or possibly two exceptions, and that portion of the bony skeleton known as the pelvis forms an obstructive element in parturition. The newly created mass that must pass through this bony ring has also a bony skeleton of very irregular outline, alterable only to a limited extent. But in the lower order of animals complicated parturition is rarely observed, and in the lower races of the human family we may say that it is comparatively rare, while among the most civilized races dystocia is of such common occurrence that the time of parturition is regarded with the greatest concern. On the maternal side one of the causes for this is the fact that the skeleton of man is maintained in an upright position upon two extremities. To maintain this position the bones of the pelvis must be, comparatively speaking, larger and more compactly bound together than in the lower animals. On the fetal side it is apparent that in the evolution of the race the tendency has been toward a gradual increase in the size of the encephalic extremity of the cerebro-spinal system—the head—and the gradual moulding of the head to approach more and more the form of a sphere. Coincident with these changes we observe that the condyles, by means of which the head is joined to the spinal column, are advanced further and further toward the middle of the skull as we ascend the scale of animal life, till in man they are placed near the centre, a position that would balance by the easiest method a spherical object upon a perpendicular line.

Lusk says: "The insertion of the spinal column at a point

nearer the occipital than the frontal extremity of the child's head is of supreme importance in the furtherance of the mechanic processes of labor. It converts the head into a lever consisting of two unequal portions. When the head, therefore, encounters circular resistance in passing through the obstetric canal, pressure transmitted through the spinal column causes the descent of the occipital short end of the lever, while the pressure on the forehead from the side walls flexes the chin upon the thorax; the degree of flexion depends upon the size of the canal through which the transit is made."

By accurate measurement upon an adult skull I found that the distance from the centre of the condyles to a perpendicular line touching the frontal eminence was 4.18 inches; from the centre of the condyles to a perpendicular line touching the occipital protuberance was 2.56—a difference of 1.58 inches. We see, therefore, that the condyles are about an inch and a half nearer the occipital than the frontal extremity of the head. The lever theory, however, as above referred to, is not consistent with what actually takes place in the descent of the child's head through the parturient canal. The head may be compared to a lever of the third class, *i.e.*, a lever with the power between the weight and fulcrum; but the fulcrum shifts during labor from one end of the lever to the other, according as the forehead or occiput encounters the bony canal. For instance, when the forehead meets resistance the occipital short end of the lever descends, but when the occiput is held at the symphysis pubis the frontal long end of the lever descends and sweeps over the perineum, or *vice versa*.

It would therefore seem to me that this inch and a half departure of the condyles from the centre of the skull is of little importance in the mechanism of labor in the human family. The short arm or the long arm of the lever advances alternately along the parturient canal in the line of least resistance. The same results would probably occur with equal facility were the condyles exactly in the centre.

Man, through his intellectual development, has lost some physical qualities which render procreation more difficult; he has more of the reasoning faculties and less of instinct. But that which he loses from nature he continually supplies by art. It is characteristic of nearly all of the orders of the class mammalia that their bodies are protected by hair; art has supplied this defect in man by furnishing him clothing. In man, with a highly organized nervous system there comes also, as a natural consequence, a greater susceptibility to pain, but art supplies a

remedy. The processes of evolution have rendered parturition in the human family more dangerous to both mother and child, as a consequence of which obstetrics as an art has been developed and the forceps has been evolved.

The obstetrical forceps is a two-edged sword. In the hands of the skilful it is a device capable of saving life and curtailing pain. In the hands of the unskilful it has done great harm. A professional friend told me that he was called to a case where an unsuccessful attempt had been made to deliver a

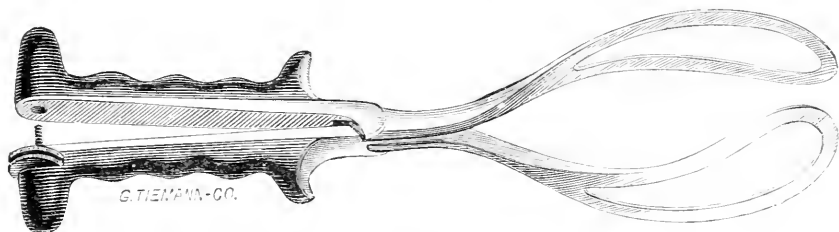


FIG. 1.—Elliott's forceps.

woman by forceps, but in the attempt the peritoneal cavity had been invaded and coils of intestines were found protruding into the vagina.

Of the making of forceps, like the making of books, there is no end. There are a number that are good. The essential features in forceps are that they should be aseptible, they should have the proper cephalic and pelvic curve, they should be rigid enough to prevent slipping and yet not cum-

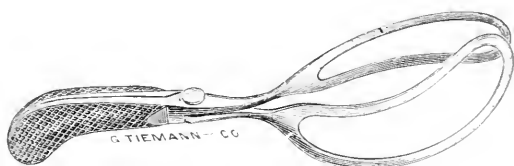


FIG. 2.—Hales' short forceps.

bersome, and they should be so constructed that traction can be applied as near as possible in the direction of the axes of the pelvic planes. We recognize three varieties, viz.: (1) long, (2) short, (3) axis-traction. The first variety is well represented by the Elliott forceps (Fig. 1). Jenks' or Hales' short forceps are good representations of the second variety (Fig. 2). The best known axis-traction forceps is Tarnier's, an improved pattern of which is represented in Fig. 3. The expense of the Tarnier forceps has prevented its adoption by the general prac-

tioner. An inexpensive and practical substitute for this forceps is the device known as Reynolds' axis-traction rods. These rods may be attached in the lower angle of the fenestra of an ordinary long forceps, as shown in Fig. 4.

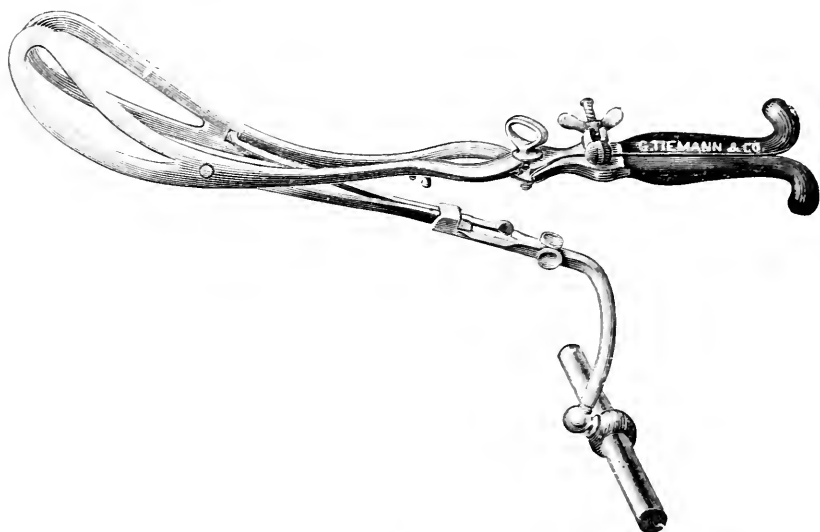


FIG. 3.—Tarnier's axis-traction forceps.

Dr. J. Clarence Webster, who has just delivered the opening address of this symposium, has been kind enough to allow me to inspect the new axis-traction forceps of which he speaks,

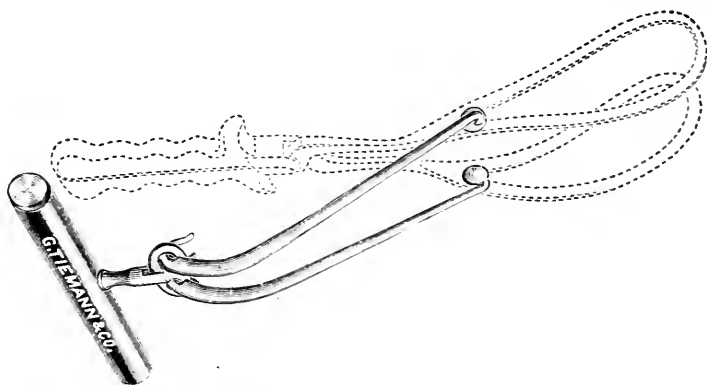


FIG. 4.—Reynolds' axis-traction rods.

and explain to me the advantages of the mechanical principles upon which it is constructed. This instrument, known as the Milne Murray forceps (Fig. 5), has been evolved by its author from the original long Simpson and Tarnier forceps, the curve

of which has been modified to correspond as nearly as possible to that of the pelvis. The fenestra are moderate in length, and the traction rods are attached as near to their lower angles as possible, so that traction when applied will be in line with the axis of the pelvic planes. The traction bars extend along under the forceps handles for some distance, nearly parallel with them, and then, instead of dropping downward to a handle in a gentle curve, as in the Tarnier forceps, the bars drop abruptly at right angles to the shank of the forceps, and upon this perpendicular bar is a handle so adjusted that it may be shifted to any desired point. By this contrivance the line of traction may be altered to suit different forms of pelvises.

When traction is made with axis traction forceps and the head advances, the handles gradually describe a curve in an upward direction. The proper direction of the line of traction is

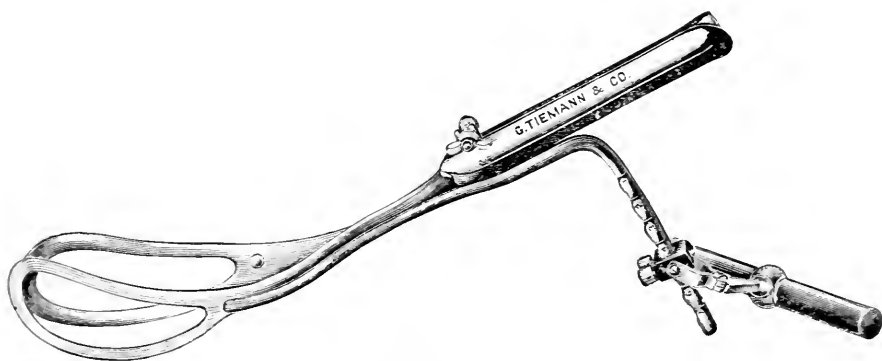


FIG. 5.—The Milne Murray forceps.

represented by a tangent of the pelvic curve. As this curve is constantly changing, it is claimed by Dr. Murray and the advocates of his forceps that the direction of the traction force should change correspondingly. The handle of the forceps may be considered an index to the change constantly going on, and if the traction bars are maintained in a position parallel with the handle bars of the forceps the traction force will always be in the right direction. It is claimed that this parallelism can only be maintained with an instrument constructed with the perpendicular bar and shifting handle like that of the Milne Murray forceps. Regarding the merits of the axis-traction forceps there can be no question, yet outside of the large cities or lying-in institutions they are seldom used. In the next few years this condition of things will be changed. In the opinion of competent observers the axis-traction forceps is destined to almost entirely displace the ordinary forceps.

There are some general rules that should be strictly observed in all cases of forceps delivery. These observations refer particularly to private and not to hospital practice. The forceps should be rendered clean by boiling. The patient should be thoroughly anesthetized with chloroform. There are but few obstetrical cases where chloroform is contraindicated; it assists in delivery, and it is barbarous to deny the patient the relief it affords. If the bed is used instead of a table, the patient should be placed crosswise, with the buttocks close to the edge and raised by folded blankets or comforters, so they will not sink beneath the side-board. A half-dozen thicknesses of newspaper, over which is placed a newly laundered sheet four double, will serve for an oil cloth or Kelly pad if placed under the pelvis and conducted to a slop-jar on the floor. In ordinary cases the limbs are placed in the lithotomy position, each one being entrusted to an assistant. If help is scarce one assistant can control the limbs, if a sheet is rolled up diagonally, the central portion placed under the neck of the patient, and the ends tied loosely about the thighs above the knees, with the limbs in the lithotomy position. The urine is drawn and the rectum emptied; the external genitals and adjacent surfaces of the thighs are washed with soap and water. A vaginal douche is given either of carbolic acid one or two per cent, bichloride 1:4000, or lysol 1:100; lysol is preferable, as it does not injure the instruments and is a lubricant as well as an antiseptic. I know many will say that this method of preparation involves unnecessary precaution and exposure; but it should be borne in mind that delivery with forceps is a surgical procedure and should be conducted with the same degree of care as any other surgical operation, and I do not believe it is possible to do a clean forceps delivery under the bedclothes with the patient in the ordinary position. Our hands having been cleaned with soap and water and an antiseptic solution, we are ready to apply the forceps. This seems like a simple thing, and an explanation about the right and left blades and right and left sides seems unnecessary. Sit down in a chair, ready to apply the forceps; take up the forceps, put them together, and hold the points at the vulva in the position they will be when upon the child's head. The blades cross at the lock; now take the lower blade and you have the one that should be first inserted.

To insert the blades there are two things to be remembered: (1) the curve of the child's head, (2) the curve of the mother's pelvis. Adapt the blades of the forceps to these two curves

and the handles will take care of themselves. When the lower blade is in place the shank rests upon the perineum, and there is but one place where the second can be inserted, that is, opposite the first, and when inserted it drops down upon the under blade ready for locking.

It is impossible in this paper to mention all of the indications for the use of forceps embraced under the second general head. Individual deviation in structure or function, either in the parent or fetus, from a certain type, we designate as normal. In many cases the indications are such as to admit of no doubt; in other cases it is simply a question of individual judgment. In general we may say that in all cases of feeble action of the uterus and accessory muscles due to exhaustion, and where there is no obstruction either in the soft or bony tissues to the advancement of the head, forceps are indicated. They are indicated also in cases where rapid delivery is necessary in the interest of the mother, as in heart disease, pneumonia, convulsions, and hemorrhage; or in the interest of the child, as weakness of the heart from protracted labor, prolapse of the cord, etc. Forceps should not be applied until the cervix is dilated or dilatable and the membranes ruptured; they should not be applied through a cancerous cervix nor to a hydrocephalic head or a decomposed fetus, nor in any case where the fetal head and pelvic canal are so disproportionate that a living child cannot be born. In no case should the head be dragged through the parturient canal by brute force. The forceps is a traction instrument, pure and simple, and an up-and-down or pendulum motion is never permissible. Even the traction force must be applied with sense and moderation. It must be remembered that the object in view is not only to *deliver* the child, but to deliver it alive and without inflicting harm upon the mother. If in any case undue force is required it is a sign that forceps are contraindicated, and to persist in using them is a procedure compared with which symphyseotomy and Cesarean section are conservative operations.

In introducing forceps several fingers of the unengaged hand should be introduced into the vagina and direct the blades so that the fetal or maternal tissues are not injured; especially must this rule be observed in high forceps, where the blades enter the lower segment of the uterus, and at no time should force be used either in introducing or locking the instruments. If force is required to accomplish these objects, it is an indication that the application is faulty or the case is one where the forceps is not indicated.

The operations of forceps applications are divided into: (1) low, (2) medium, (3) high. Under low forceps we recognize the following divisions with reference to position and presentation: (1) occiput anterior, (2) occiput posterior with partial rotation, (3) occiput posterior, (4) face presentation, (5) breech presentation.

Low forceps with occiput anterior is a simple procedure. When adjusted the forceps embrace the head in the biparietal diameter. Here forceps are indicated when from any cause the head ceases to advance along the floor of the pelvis. When the head is left in this position for some time, the danger of permanently impairing the tone of the tissues of the pelvic floor is much greater than possibly can be incurred by proper application of forceps. Traction should be intermittent, so that the perineum can gradually relax, and at each intermission the pressure upon the head should be released by loosening the forceps at the lock. These rules should be observed in all forceps applications. When the occiput has been brought down well under the pubic arch, the forceps should be carefully removed.

To conclude the delivery of the head I have found the following method advantageous: With the right hand grasp the bulging perineum between the coccyx and anus, palm upward, the ball of the hand resting upon the perineum between the anus and vulva. In this position an outward and upward impetus can be given the head, and the palm of the hand can very accurately measure and control the stretch of the perineum. Now press the first two fingers of the left hand down behind the occiput and against the pubic arch, which will form a fulcrum for the fingers, the tips of which, by acting upon the occiput in unison with the other hand, gradually force the face out over the perineum; or if the patient is high enough, as upon a table, the position of the lower hand may be reversed (palm downward) and the thumb and fingers form a crutch grasping the perineum, the advance of the head being then controlled by the thumb of the upper hand. If the elbow can be supported upon the knee the power of the lower hand can be materially increased. This is a safer and more elegant way than hooking the chin out with a finger in the rectum. The form of forceps used in this operation is immaterial. The short forceps is usually employed. Dr. Webster, as you observe, recommends the axis-traction forceps in all cases, regardless of the position or location of the head.

Occiput Posterior with Partial Rotation.—Firm uterine

contractions and a pelvic floor of good tone are the requisites for anterior rotation. If either of these conditions is lacking, rotation may be incomplete and the head will then occupy an oblique position in the pelvis. If the uterus is at fault and the patient not already exhausted by her efforts, eight or ten grains of quinine may be given. With this treatment the uterus, after resting an hour or two, will sometimes contract firmly and terminate labor without forceps. If this does not occur, forceps should be applied in the oblique diameter opposite to that occupied by the head, if possible; if it is not possible to do this, they should be applied directly to the sides of the pelvis without regard to the position of the head. Rotation should not be attempted with forceps, but the forceps should occasionally be unlocked or readjusted so as not to *interfere* with rotation. With care and patience a living child may usually be delivered, yet the operation is primarily in the interests of the mother.

Occiput Posterior.—With the occiput in this position forceps should be withheld till Nature has been afforded reasonable time to rotate the occiput anteriorly. Should this not occur, forceps should be applied to the sides of the head and traction made in a downward direction with a view of bringing the forehead under the pubic arch. When this is accomplished the forceps should be removed, and if Nature does not rotate the occiput forward, delivery must be accomplished with forceps. Should it appear impossible to deliver the child alive, or if delivery implies severe injury to the maternal soft parts, symphyseotomy should supplement forceps. I realize that this suggestion seems radical to some. We have reached that stage of obstetric surgery where we are warranted in claiming that mutilating operations upon the living child are unjustifiable. But, I would ask, what is the difference between killing a child with forceps and doing mutilating operation, so far as the child's interests are concerned?

Face Presentation.—In face presentation, if the chin has rotated forward, forceps should be applied to the sides of the head, and by traction horizontally the chin may be brought well under the pubic arch, when by elevating the forceps the top and back of the head slides out over the perineum. If the head is wedged in the lower pelvis and the chin turned backward, symphyseotomy is indicated in case of a living child; in case of a dead child craniotomy should be performed.

Breech Presentation.—In breech presentation forceps may be applied over the sacrum and posterior surface of the thighs

if rotation has occurred; if the hips are transverse, manual rotation should be attempted; if this cannot be accomplished the forceps should be applied to the lateral aspect of the thighs. In any case great care should be exercised not to employ sufficient pressure to injure the child. In breech presentations the management of the after-coming head is sometimes the most difficult and, to the child, the most dangerous part of delivery. It has been claimed that the manual manipulation known as the Smellie-Veit method largely does away with application of forceps to the after-coming head. If, however, the head becomes extended and the chin caught behind the symphysis, forceps should be applied at once, either anteriorly or posteriorly, as deemed best.

Medium Forceps.—The term medium forceps is used by

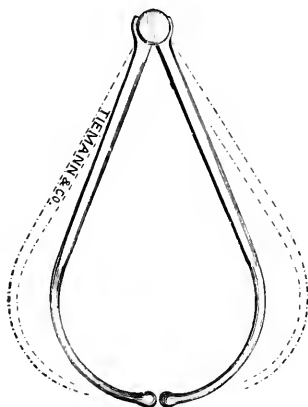


Fig. 6.—Calipers for pelvimetry.

some authorities for the operation of applying forceps to the head when a portion of it, at least, has descended below the superior plane. But inasmuch as high forceps are not generally used until the head has engaged in the superior strait, and inasmuch as the conduct of labor is very similar in the two classes of cases, I will consider the two operations under the head of high forceps.

High Forceps.—In high forceps applications the greatest patience, care, and skill are required to conclude the operation success-

fully. This procedure is indicated in cases of hemorrhage, as in placenta previa, in eclampsia, contracted pelves, and failure of the expulsive forces. If the head is not fixed at the brim, version should be the operation of choice. A careful examination of the head and maternal soft and hard parts should be made to determine, if possible, the cause of delayed labor. For this examination the patient should be well under chloroform, and, if necessary, the hand should be introduced into the vagina. The flattened and generally contracted pelves are deformities most frequently met with in the bony canal. To discover these deformities pelvimetry should be employed. Where it is possible this should have been done previous to labor,

For measuring the external diameters of the pelvis the ordi-

nary mechanics' calipers with curved arm ten or twelve inches long and a carpenter's pocket rule will answer every purpose. In this measurement the external conjugate is of the most importance. In average normal cases this is eight inches.

More accurate knowledge can be obtained, however, by estimating the diameters of the internal pelvis, for which purpose the fingers and hand are used. If the promontory cannot be reached with the second finger, or if the estimated diameter at the brim is $4\frac{1}{4}$ to $4\frac{1}{2}$ inches, the conjugate diameter is normal. It has generally been conceded that if the true conjugate diameter is less than $3\frac{3}{4}$ inches, with a fetal head of average size, forceps delivery should not be undertaken. With the introduction of the axis-traction instruments the field for forceps has been considerably enlarged.

Dr. William L. Richardson, of Boston, says:¹ "Dr. Longaker does not believe that a contraction of the pelvis itself is a sufficient reason for the performance of version, inasmuch as the axis-traction forceps will be found sufficient for the extraction of the head through a flat pelvis with a conjugate of 3 inches or even a trifle less, and through a conjugate of a generally contracted pelvis of at least $3\frac{1}{2}$ inches. In flat pelvises with a conjugate of not more than $3\frac{1}{4}$ inches and not less than $2\frac{3}{4}$ inches premature labor should be induced." Dr. Webster suggests in these cases a wider range for forceps than this—in generally contracted pelvises 3 inches and in flat $2\frac{3}{4}$ inches, provided axis-traction forceps are used and the patient placed in the Walcher position. To obtain this position the patient is placed with the pelvis near the edge of a table, the legs hanging down, but the feet not touching the floor. Forceps delivery has been accomplished in this position with a conjugate of 2.75 inches.

With high forceps the blades should be applied to the sides of the pelvis, without regard to the position of the head. As the head is grasped obliquely there is more danger of compression, so the rule of frequently unlocking the instruments should especially be observed. When the head has been brought down to the floor of the pelvis, if rotation has not already taken place and if there are no indications for immediate delivery, the forceps may be removed and an opportunity afforded the head to rotate. If this does not occur in a short time, however, the delivery must be completed with forceps.

MASONIC TEMPLE.

¹ Annual of the Universal Medical Sciences, 1883, vol. iv., p. 217.

THE TECHNIQUE OF VERSION.

BYJ. F. PERCY, M.D.,
Galesburg, Ill.

VERSION, in its obstetrical relation, is the act of turning the child *in utero*. Attempting this manœuvre presupposes an undesirable position for the safe delivery of the child and for the mother as well. As a preliminary to the discussion of the proper performance of version, it may be stated that the period of election for the successful performance of this act depends upon many fortuitous circumstances, and that, this period once passed, favorable conditions cannot well be recalled. An important preliminary aid to the final success of version will be found to lie in an exact diagnosis of the relation of the fetus *in utero* to the maternal parts. This will require either abdominal palpation, a vaginal examination, or both combined. This examination, to be complete, presupposes that the measurements of the pelvis have been determined by the pelvimeter. Version should never be attempted in a pelvis where the conjugata vera is less than 9 cubic centimetres (3.6 inches). As a means of determining this, internal measurements of the pelvis by the methods usually recommended have never in my hands proved to be accurate enough for safe work. The rule to subtract $9\frac{1}{4}$ centimetres (3.7 inches) from the external diameter of Baudelocque has been more accurate and practical. Another very practical aid is to examine the prospective mother by abdominal palpation every two weeks after she has advanced beyond the seventh month of pregnancy. This gives the practitioner, if I may be allowed the expression, "a bird's-eye view" of the concluding weeks of pregnancy. At these examinations the position of the fetus is not only learned, but the possibility of making its head engage at the pelvic brim is determined. Version best fulfils the indications for its performance in cases requiring haste in delivery, as eclampsia, placenta previa, premature separation of placenta, threatened death of fetus, and in cases where the life of the mother is jeopardized. Version, again, will do good service in many cases of transverse presentations, especially with prolapse of

an arm, in persistent prolapse of the cord, in compound presentations—*i.e.*, arm and head, cord and arm, feet and arm, etc. In cases where the head will not engage at the brim after hours of pain, version may serve a most useful purpose, as also in the cases where the chin is posterior, and in certain deformities, especially the justo-minor and the flat pelvis. There are three varieties of version: cephalic, where the head is brought to the brim; pelvic, where the breech is brought to the brim; and podalic, in which the feet are brought to the brim. The methods by which these positions are encouraged and maintained are known as the external, internal, and combined. The latter also bears the name of Braxton Hicks. In performing version the patient should be placed on a bed or table that will raise her about thirty inches from the floor. This obviates the necessity for working in a constrained position. The ordinary wearing apparel should be removed, and the abdomen, together with the pelvic outlet, buttocks, and knees, covered with some material (preferably gauze) that will not fail to give perfect freedom to the manipulative movements that may be applied to the abdominal wall. Version belongs to the domain of surgery. The preparation of the physician, therefore, should be as for a capital operation. In making ready the patient the following procedures have given excellent results: An empty bladder and colon. The buttocks well elevated and drawn to the edge of the bed, with the knees either flexed on the abdomen and maintained there by the aid of human or mechanical assistance, or permitted to hang over the edge of the table as practised by Walcher. The pubic hair, if not removed by shaving, should at least be closely clipped. The patient must now be anesthetized, in order not only to make effective the next step of the preparation (scrubbing), but also to more effectively perform the act of version. Every part of the body which is to be involved in this manual process should be thoroughly scrubbed with green soap aided by a generous gauze sponge. At least ten minutes should be given to this, both within and without the vagina. Particular attention is to be paid to the removal of the smegma which collects about the glans clitoris. If necessary the adhesions often existing between this organ and the labia minora should be broken up in order to remove this bacteria-laden material. After the parts have been thoroughly scrubbed, and douched with sterilized water to remove what remains of the soap, alcohol is next to be poured over the field. The alcohol

should be made to bathe every part of the tissues on which the soap and gauze has previously been used. Further douching with solutions of mercuric bichloride is, I think, unnecessary. After delivery is accomplished a final (vaginal) douche of creolin may serve a useful purpose.

As to the position of the physician in relation to the patient when about to perform version, no hard-and-fast rules can be laid down. Indeed, attempts made to remember rules rather than principles may lead, as has been tritely stated, to many disastrous results in this as well as in other branches of medicine. It may not be amiss, however, to mention that most of the authorities state that when the back of the fetus is to the left of the mother the left hand should be used, and *vice versa*. Rupture of the bag of waters coincident with the first onset of labor frequently means an abnormal presentation, and an abnormal presentation a deformed pelvis, as was long ago pointed out by Pinard. If a transverse presentation is found before rupture of the sac and dilatation of os, an attempt may be made to correct the position by external manipulation. In attempting these movements the hands should be laid flat on the abdomen and made to seek each extremity of the fetal ovoid. When discovered the breech and anterior surface of the child should be pushed away from the pelvis, while with the other hand the head should be pushed into the pelvis. Attempts to change the position of the fetus *in utero* are sometimes made easier if the position of the mother is also changed. This change should encourage the displacement of the breech of the child in such a way as to cause its head to gravitate into the false pelvis. When this has been brought about, the head must be retained there (preferably by the hands) until through expulsive pains it has entered the superior strait. If the cervix is dilating and dilatable, it is good practice to rupture the amniotic sac in order to retain this favorable position of the fetus by having it the more closely grasped by the uterus. Under favorable conditions this form of version is not a very difficult manœuvre, but, unfortunately, the number of cases in which it can be made a practical aid are very infrequent. Under conditions not so favorable: To enumerate, where the greater part of the amniotic fluid has drained away, or prolapse of an arm or the cord has occurred, or where the shoulder is found to have entered well into the pelvis, other means of version may have to be employed. If some of the fluid remains after rupture of the sac,

it is good practice to plug the vagina or cervix with a Barnes or a Champetier de Ribes bag distended with warm sterilized water. Version is then attempted by external manipulation, as in cases where the sac has not ruptured. If external version cannot be made to succeed, and the bag of waters has not ruptured, and the cervix can be dilated sufficiently to admit one or two fingers into the uterus, the combined method of Braxton Hicks may be attempted. The presenting part by this method is crowded from the outside upon the fingers in the uterus and by them manipulated, with the aid of the external hand, into the position desired. This method requires for its successful performance an unruptured amniotic sac (although this is not paramount to success) and a uterus not over-irritable, together with a sufficient degree of fetal mobility. Its chief advantage is the fact of its availability early in labor and entire freedom from danger to the structures involved in its performance. Unfortunately, however, this method will not always succeed in delivering the woman of her child. There remains then for our consideration internal or podalic version, which Figg, of London, so long ago as 1858, claimed should be universally made the method of terminating every case of labor. This method requires sufficient dilatation of the cervix to admit of the introduction of the hand into the uterus. This may be brought about by the gradual introduction of an increasing number of fingers until the whole hand can be entered. Additional dilatation may be obtained by closing the hand within the uterus and gently withdrawing it. The Barnes bags distended with sterilized water also make most efficient dilators. When dilatation has reached a point sufficient for the introduction of the whole hand into the uterus, cephalic version is no longer to be thought of. With the hand in the uterus the obstetrician is to grasp one or both of the feet. With a foot or the knee within one's grasp traction can, in most cases, be easily exerted and a foot delivered. The delivery will undoubtedly be easier if the anterior leg or thigh of the child is the part on which traction is exerted. It can readily be seen that should traction only on the posterior leg be made, the anterior surface of the child presenting at the symphysis will press with a force greater than would be possible from traction made only on the anterior leg. Extraction by traction requires great care, and should never be attempted without the aid to be derived from the free-hand manipulating and pressing the uterus downward from above.

In the greater majority of instances attempts at version will succeed best when made in the interval between the pains. If the case is one of a transverse presentation complicated with a prolapsed arm, the latter usually causes no new difficulty if let alone. The text books offer the advice to retain control of such a member by putting a tape around it at the wrist. This (when a successful version returns the arm temporarily to the uterine cavity) can be made to act as a tractor to prevent the upward drift of the arm over the head in the downward progress of the child. In persistent prolapse of the cord, if position and the fillet in turn have failed to aid in retaining it within the uterus, podalic version is not only a legitimate procedure, but it promises much in the way of a safe delivery.

The two remaining conditions in which version is often useful are placenta previa and true uterine inertia. In either condition temporizing methods are bad treatment. The indications are imperative and demand that the uterus be emptied at once. If the cervix cannot be rapidly dilated by the hand of the obstetrician, deep incisions through it, as advocated by Dührssen, should be made. The incisions should extend through the vaginal portion of the cervix to the lower uterine zone. When this has been done the hand should be introduced and an extremity brought into the vagina. This treatment has greatly reduced the mortality both to the mother and the child, if the latter was viable at the time delivery commenced. When cephalic version has brought the head successfully into the cervix, little remains for the obstetrician beyond the ordinary conduct of labor. If the case is one of podalic version, after bringing the feet into the vagina the case may be left to Nature. If haste—usually the imperative rule in version—is necessary, traction may be exerted on the delivered member.

After delivery of the feet and breech careful attention should be given to the cord. If it pulsates but feebly the case cannot long be left to the unaided efforts of the woman.

If immediate delivery is deemed a hazardous procedure for the mother and pressure is interfering with the circulation in the cord, it must be lessened. This can sometimes be successfully accomplished by following up the cord with a pair of placental or other large forceps and opening it sufficiently at the pressure point. If the blades are wrapped with gauze, greater space for the cord can be obtained and the possibility of damage to the tissues avoided. In podalic version delivery of the aftercoming head may present many difficulties. It is assumed that the arms have been prevented from slipping over

the head and nothing now remains but the delivery of the latter. It should be understood here, as if in parenthesis, that in making prominent the possible difficulties to be met with in version I do not wish to magnify this *part* of the subject to the degree of the subject itself. If the necessity for version is recognized by the careful practitioner at a time when it can best be performed, it offers more in the way of good results, with less danger to the mother and her child, than any other major obstetrical procedure. With the head remaining undelivered, it is important to wrap the body of the child with some covering that will prevent chilling of the skin. Not to do this will invite respiratory efforts which will endanger its life. To deliver the child's head many methods are advocated. The more prominent bear the names of Prague, Deventers, Wigand-Martin, and Smellie-Veit. The one which so long has borne the name of Prague, where it originated, suffices in the majority of cases. To make use of it the partially delivered child is grasped by the feet with one hand, while two fingers of the other are hooked over the shoulders from the back and close to the neck. Traction should first be made upon the child downward over the perineum of the mother until the head has slipped fully into the pelvis. With this accomplished the feet are rapidly raised toward the abdomen of the mother, using the fingers over the shoulders as a fulcrum, and the head, as it were, is shelled out of the vagina.

Deventer's method is chiefly useful in the cases where the arms have become extended over the head. By this method the child is grasped as in that bearing the name of Prague, but extension is chiefly and forcibly downward, causing the arms to be pressed against the sacro-sciatic ligaments and favoring extension. "The occiput appears at the vulva and is born first, and then come the head and arms." To be most successful this method usually requires a roomy pelvis.

By the Wigand-Martin method the arm of the operator is made to extend along the under surface of the child until the tips of the first and second fingers can be hooked over the lower jaw. The head is then flexed and drawn down. With the other hand powerful, but not brutal, pressure is made on the occiput through the abdominal wall downward in the direction of the axis of the superior strait.

A number of useful manoeuvres are classed under what is known as the Smellie-Veit method. The principle of these is to secure flexion of the head by pressure over the malar bones or by traction on the lower jaw with the fingers placed in the

mouth. Pressure upward on the occiput beneath the arch of the pubes will aid further in maintaining flexion and is part of this method. When flexion of the head has been secured, the fingers beneath the arch of the pubes are slipped down over the shoulders as in the Prague method, the body of the child meanwhile resting on the arm of the operator. Since the indications for one or the other of the above methods have been more generally understood, the use of forceps as the last act in version has been greatly reduced. More than this, in cases where conditions are favorable for version and yet the question of the greater value of forceps is in the balance, the preference can be given to version if flexion of the fetal head will be maintained by the methods just referred to. This question of flexion is especially important in version where the pelvis is universally contracted (*justo-minor*). In the flat pelvis it is not a matter of so much importance. It is well, I repeat, to remember that flexion is encouraged by following the uterus down from above with pressure during the descent of the child.

Absolute uterine inertia requires the solving of many problems before the life of the mother and the child can be guaranteed. The part that version may be called upon to play in this important complication of an abnormal labor may be various. This, however, may be said of any procedure where such a condition exists. As to the various pathology of uterine inertia it is not within my province to speak. But occasionally a cervix that will partially stretch but not dilate is met with. To turn and drag the breech or head through this ring will usually result in a complete rupture of the cervix up to or through the vaginal fornix into the broad ligament or peritoneal cavity. In the latter event death of the mother is the usual melancholy sequel. Deep anesthesia carried to the point of danger, as well as the various methods by which drugs are given internally or applied locally, have failed to make the cervix dilate. I have never attempted the deep incisions into the cervix recommended by Dührssen. Should I ever again meet a complication of this character I would not hesitate to use the knife, but would have the same fear that has influenced me in the past of the incision being converted into an indeterminate tear at the acme of delivery of the breech or head. It is important to state that Dührssen insists that *multiple* incisions prevent this extension.

The so-called ring of Bandl must not be mistaken for the condition of the cervix just spoken of. The latter is due to the

upper part of the uterus contracting and getting thicker, while the lower segment, from persistent stretching, becomes thinner and thinner. "It is felt internally, when the hand is introduced into the uterus, as a ridge, sharply defined and projecting inward; and externally, by abdominal palpation, as a furrow. This is Bandl's ring." This thinning of the lower uterine segment is sometimes met weeks preceding the advent of labor. Through the abdominal walls of the woman the child can be felt as if it were free in the peritoneal cavity. In the two cases which have come under my care this condition was discovered through the examinations above referred to, made every two weeks in the latter months of pregnancy. The question of an obstetrical operation such as version, no matter how imperative the demand in a condition such as this, would be fraught with danger to the child, certainly so to the mother. Whether the condition is similar to or identical with the ring of Bandl I have no means of knowing. If there is literature on the subject I have been unable to find it. It is possible that the development of the ring of Bandl may precede some of the labors in which it appears many weeks, and that if it were the rule to examine pregnant women oftener this complication would be anticipated. However, our interest in this paper must centre around the proper technique of version. Therefore the ring of Bandl and allied conditions can only be studied from this standpoint. It is thus important to know that sometimes, even when the head can be forced from the uterus, it is the part of wisdom to desist. Further, let us remember that version is but one of the many useful aids which have come down to us from the masters of the past by which a living child can be delivered to the world and its mother left to develop it.

THE MANAGEMENT OF IMPACTED CASES.

BY

HENRY F. LEWIS, A.B., M.D.,
Chicago.

IN obstetrics impaction may be defined as that condition in which the presenting part is stuck fast in the maternal passages, neither advancing with the pains nor receding in the

intervals.' The presenting part of the fetus wedged in the pelvic canal renders the soft parts anemic by pressure which, if continued long enough, causes necrosis. At the same time the pressure interferes with the circulation of the parts in the canal below so that these become swollen and edematous. But the worst feature of the case is that the labor becomes indefinitely prolonged and indeed cannot be terminated unless the pains greatly increase their intensity or unless assistance is furnished. It might appear obvious that any head which can enter the pelvis can emerge from it, except in the extremely rare instances of funnel-shaped pelvis.² This is theoretically true, but practically, in a real impacted case, the dangers of prolongation of labor are so great that radical operative interference is demanded.

Stimulating drugs, such as alcohol or quinine, may be used, but their effects are problematical and little reliance can be placed upon them. The use of drugs like ergot, which tend to cause tetanic contraction of the uterine muscle with consequent danger of rupture of the uterus and of interference with the respiratory function of the child, is to be strongly condemned. In all cases of impaction one of three things must be done: the powers of expulsion must be augmented, the passages must be enlarged, or the passenger must be diminished in size. The first is accomplished by pushing or pulling, the second by symphyseotomy, and the third by embryulcia. With the presenting part so snug in the canal that it cannot without difficulty be moved up or down, Cesarean section must be out of the question because of the difficulty of pulling back the impacted fetus.

In this paper I shall consider impaction as limited in causation to disproportion between the bony canal and the presenting part, and shall not consider dystocia due to tumors, cicatrices, etc. Any part which presents may become impacted if it is too large for the canal or if it enters the canal in an unfavorable position.

The breech, of course, can only rarely fit so tightly as to stick fast. The delay in such presentations is more often on account of the difficulty of dilating the os or from inertia. A child with a breech large enough to obstruct labor and to become impacted would be too large to allow its aftercoming head to pass, except in the case of a monstrosity. Likewise a pelvis small enough to present such an obstruction to the passage of a breech would also be too small to allow the birth of

the rest of the body and the head, except that head be abnormally small for its body. In some instances of anencephalus the body takes on a gigantic growth sufficient to be a cause of dystocia, and in such cases the breech may be so large as to become impacted within the pelvic canal.³ Even in such monsters it must very rarely happen that impaction will occur, because the necessary pressure between the pelvic walls and the soft breech would seldom be sufficient to stop all progress. If the uterine pains continue strong the case may usually be left to Nature. There will, of course, be no trouble in the passage of the aftercoming head. When interference is indicated we have the choice of the usual methods of artificial extraction of a breech—namely, forceps, the blunt hook, the fillet, and the hooked finger.

Authorities differ concerning the application of forceps to a breech. The blades are very likely to slip when traction is exerted, and thereby injure the maternal soft parts. If enough compression is exerted to prevent this slipping there will be dangerous pressure upon the soft parts of the child, and even danger of injury or fracture of the thighs or ilia. In many cases, however, extreme care and skill have resulted favorably by the use of forceps applied over sacrum and thigh.⁴ The blunt hook passed into the fold of the groin is better if care is taken not to injure the soft parts in the introduction and if traction is exerted in the line of the axis of the fetal body, to guard against breaking the thigh. Of course, in the case of the anencephalus which we are considering, it makes little difference whether the child's parts are injured, because the monster is incapable of living after birth; but when such a fetus presents by the breech a certain diagnosis is not easy, to say the least. The fillet is a less dangerous instrument, but is more difficult to introduce, even with the help of a *porte fillet* or of a webbing male catheter. These instruments, too, will seldom be found in the obstetric bag. As in the extraction of breech cases in general, we are usually reduced to the use as a tractor of the finger hooked into the fold between the anterior thigh and the belly. Under an anesthetic, with the hand in the vagina, the forefinger can usually be employed. If these means fail we have the choice between embryotomy and symphyseotomy. If we know the child is dead we choose the former; if not, we choose the latter, unless we have been so skilful or fortunate as to have already made the diagnosis of the monstrosity.

With anencephalus of gigantic body presenting by the vertex the shoulder may become impacted. In such an event, by the time the shoulder has advanced far enough to become impacted, it will usually be possible, on careful digital examination, to make a diagnosis of the monstrosity. Having done this, if the efforts of Nature fail to cause an advance of the fetus, there remain but two justifiable procedures. The first is extraction with the cranioclast or cephalotribe. The ordinary forceps cannot be applied to an anencephalic skull. The life of the fetus is worthless. We have in such a case practically the same condition as after perforation and evacuation of the skull. The cranioclast will easily fit the anencephalic head, and strong traction can be exercised. If, on account of too tight impaction, the fetus is not easily extracted by the first method, we must resort to the second, which is embryotomy. Complete cutting up of the fetal body, or even section of ribs, may not be necessary, but it may suffice to do cleidotomy. This cutting in two of one or both clavicles will probably allow the shoulders to come close enough together to permit extraction by the cranioclast, or even spontaneous birth.⁶

In transverse presentations which have been neglected the uterine forces may have forced the presenting shoulder so far down into the pelvis that the bent fetal body becomes impacted. Of course it is barely possible, as an obstetric curiosity, for the child to be born spontaneously, if not too large for the pelvis and if strong pains continue, but no one would be justified in waiting for such a termination. In impaction of the shoulder there is only one thing to be done and that is embryotomy. Bear in mind that I am dealing with a shoulder which has come down so far that it cannot advance and cannot easily be pushed back. I am not speaking merely of a prolapsed arm, where version might be justifiable. If a shoulder has been forced down so far that it has become really impacted, it is too late to think of version. The uterus has now become too small to hold the whole fetal body with the addition of the operator's hand, and the lower segment has become much thinned; therefore rupture would be almost certain if such a procedure were attempted. Besides this, the child is almost certainly dead or moribund, and its chances of life need not enter into the judgment of the case. Decapitation is now the operation of choice. It can be done with Braun's "key-hook," Zweifel's trachelorhactor, or other suitable instrument. If these are not at hand or obtainable, it may be

necessary to procure a piece of strong whipcord, to render it thoroughly aseptic, and, by means of a *porte fillet* or catheter, long forceps or fingers, to pass it around the neck. Then by strong traction, guided by one hand grasping the child's neck, together with a little sawing motion, it may be possible to sever the head from the body. It is, however, quite likely that there will be no room for such manœuvres, and then the only thing to be done is to cut through the neck with a strong pair of scissors guided by a hand in the vagina. When the head is free the body can be drawn out by pulling on the prolapsed arm, after which the head may be born spontaneously. If not, it may be forced to engage in the brim by pressure from above, and may be delivered by a finger in the foramen magnum or by forceps, or may be perforated and extracted by the cranioclast. It is better not to cut off the prolapsed arm, unless it is very much in the way in amputating the head, because it is useful as a handle in extracting the body. If decapitation is impossible, evacuation of the thoracic and abdominal contents may allow birth by doubling of the fetal body or may afford room for decapitation.

Double monsters may become impacted in almost any part, depending upon their species. As a rule they are born prematurely and consequently are small enough to be born spontaneously in spite of their irregular shape. When they do become impacted and the diagnosis of the monstrosity has been made, embryulcia would seem to be the only resource.

Of all parts of the fetus the head is most prone to impaction. Given a normal position of the vertex, impaction may occur in any portion of the pelvic canal on account of smallness or deformity of that canal or on account of bigness of the head. Careful examination and mensuration before labor will often reveal the disproportion between head and canal and enable the obstetrician to take measures which will forestall trouble. Especially will the size of the pelvis be ascertained by such preliminary examination. The size of the head is more difficult to estimate, unless the patient is slim or has relaxed abdominal walls. Except in such women, it is difficult or impossible even to differentiate between flexion and partial extension of the head, so as to determine whether face or brow is going to present. Without anesthesia, in women at all plump, especially primiparæ, it will be well-nigh impossible, except for the very expert few, by external examination alone to make so refined a diagnosis.

Perret,⁶ of Paris, has invented a cephalometer for measuring the fetal skull through the abdominal walls. It consists of a modified form of calipers, by which it is intended to measure directly the occipito-frontal diameter, which has been found to bear a constant average relation to the biparietal.

Even internal vaginal examination, unless the whole hand be passed through the vulva, will seldom reveal much more before the head has become engaged at the brim. If the operator has any reason to suspect that the head is abnormally large or is presenting in an unfavorable position, he should give an anesthetic and examine with care externally and also introduce the hand into the vagina.

In considering impaction in presentations of the cephalic pole, we come first to occiput-anterior positions. Such cases become impacted because of disproportion between head and pelvis, either from bigness of the one or smallness of the other. Theoretically, both of these conditions should have been recognized beforehand. Practically, in many instances it will be impossible for most of us to do this. The great majority of cases of delayed labor are caused by this disproportion, and whether this is enough to cause the head to stick, or not too much for the forces of Nature to overcome, is a difficult question to settle beforehand. Where the head is too large to comfortably pass the pelvis, we have a condition exactly parallel to that where the pelvis is too small—namely, a justo-minor pelvis—and the same treatment should be applied to each. If our preliminary examinations reveal a justo-minor pelvis of sufficient degree to render it probable that a full-sized head cannot pass, it is justifiable, and indeed indicated, to provoke labor prematurely, so as to bring the head through before it has grown large enough to become impacted. If the child seems to be of the normal size and the true conjugate is $3\frac{1}{2}$ inches or less, the chances for mother and child would be better with a premature labor during the last month than to attempt to drag the head through by forceps or to do a symphyseotomy, especially after impaction. Except for very few, external measurements of the child's head will have small value, but an estimate of the probable size of the child can be reached by measurement of the fetal ovoid.⁷ The distance from breech to vertex of the fetus curled up and flexed within the uterus is about half of its length stretched out from sole to crown. Knowing the normal size of the full-term child to be about nineteen inches, and finding that the distance from

the vertex to the pelvic pole is nine or nine and one-half inches, we know that we probably have to deal with a normal-sized child. This distance can be measured by the pelvimeter: if the head is not deep in the pelvis, by external application of that instrument; if the head is engaged, one end of the pelvimeter can be placed against the presenting part by way of the vagina and the other against the breech upon the abdomen. From this measurement deduct the thickness of the abdominal wall, which can either be estimated or measured by pinching up a fold.

In practice many cases will arise where we cannot make these estimations, even when we examine some time before the labor, because of thick or tense abdominal walls, contracted uterus, hydramnios, or other obstacle to accurate diagnosis. In such cases, if sufficient disproportion of passenger to passage exists, impaction will ensue. There will also be cases where we have not had or taken the opportunity to examine beforehand. In such cases we are confronted with a condition which demands artificial interference. As soon as impaction is recognized—that is, as soon as the head ceases to recede after a pain—then help is indicated.⁸ Webster⁹ advises the application of axis-traction forceps in impacted head cases where the true conjugate is $3\frac{1}{2}$ inches. In practice it is justifiable to try axis-traction forceps and, if moderate efforts do not advance the head, to perform symphyseotomy before patient and child are brought into danger from a prolonged and difficult labor. Under proper conditions of asepsis an elective symphyseotomy promises less danger to the child or to the soft parts of the mother than a high forceps operation with extraction of the head by main strength. High forceps is at best a dangerous instrument, bringing as it does two large, sharp steel blades well up into the lower segment of the uterus—blades with two complicated curves situated far up, out of sight and feeling of the operator. When, therefore, in the use of high forceps, great strength of pull is necessary, some other operation is indicated. Symphyseotomy adds a little more than half an inch to the conjugate diameter of the brim. In impacted cases the operation is indicated, after the failure of forceps is determined, whenever this half an inch added will give a diameter through which the child's head can probably pass. Therefore the operation is permissible with a conjugate measuring 3 inches or a trifle less. Practically, however, these measurements are, in the class of cases under considera-

tion, of less importance than would at first sight appear. Obviously a head cannot become impacted unless the equator can enter the brim. Unless the outlet is proportionally smaller than the inlet, the addition of half an inch to the conjugate diameter will always allow passage through the whole canal. Therefore, if a head becomes impacted and the pelvis is not markedly funnel-shaped, symphyseotomy will always give room enough for its complete birth. Except in funnel-shaped pelves, craniotomy on the living child will never be indicated when the head is stuck in the canal, unless extraneous circumstances forbid symphyseotomy.

The head in an occiput-posterior position enters the inlet with a normal diameter, but, unless it rotates forward, tends to emerge at the outlet with an abnormal diameter. This latter diameter is the occipito-frontal or even the occipito-mental. Unless extreme flexion is induced and maintained, one of these impossible diameters will present at the inferior strait and will necessarily become impacted. The effort of the accoucheur in such cases is to maintain flexion, so that as near an approach as possible to the suboccipito-bregmatic diameter will be that to enter the outlet. It does not lie within the scope of my paper to discuss the prophylaxis of persistent occiput-posterior positions nor the means of causing anterior rotation of the occiput. If the head is stuck so tightly, with a large diameter engaging, that it is impossible by any means to flex it, symphyseotomy is indicated if the half-inch added to the anteroposterior diameter of the outlet of the pelvis is sufficient to allow the large diameter to pass or the head to be somewhat flexed. This must almost invariably occur. The perforation of a living head for impacted persistent posterior positions can seldom be justifiable.

Certain reasons, apart from strictly scientific obstetrical indications, will sometimes compel the accoucheur to vary his rule. "In all difficult and prolonged labor cases in which many operators have examined and many instruments have been used and operations have been attempted and failed, the child, as a result of these prolonged fruitless and severe manipulations, has often suffered so severely as to have been nearly or already sacrificed. In such cases a deliberate perforation ought always to hold preference."¹⁰

From occiput-posterior positions the transition is easy to presentations of the brow and of the face. In posterior positions of the occiput the examining finger meets first the anterior fontanelle and the parietal bones, as the vertex engages

at the brim. With the child's back posterior, on account of the mother's spinal column, the obliquity of the plane of the brim, and the influence of the mother's dorsal posture, the position is less favorable for the maintenance of flexion than with the fetal back anterior. It is therefore easy for extension to occur, for the anterior fontanelle to be forced lower, and for the brow to present at the superior strait. It is only a step further for the face to be the presenting part. A complete face presentation with chin anterior will become impacted only on account of disproportionate size of head to pelvic canal. A brow presentation, on the other hand, offers an abnormal diameter for passage—a diameter impossible of birth in the case of a normal child and normal pelvis, unless there is excessive moulding of the fetal head. Some moulding there must needs be before the head can enter the pelvis far enough to become impacted. With an impacted brow we may first try axis-traction forceps in the hope that the head is small enough or flexible enough to be born by its help without the use of undue force. If all justifiable force fails to budge the head, we have the two resources: perforation if we are sure that the child is dead, and symphyseotomy if it is alive. While it is true that the longest diameter of the head presents, yet, if the head has been forced down far enough to become impacted, this diameter will have been sufficiently compressed to allow the passage with the additional room which symphyseotomy furnishes.

Schatz,¹¹ of Rostock, holds that it is erroneous to consider brow as a variety of face presentation. He believes that most stable brows are produced by drawing back of the fetal head by the fetal neck, which in turn is held back by spasmodic contraction of the internal os or of the contraction ring. This spasm draws up the shoulders and thereby the neck and so the base of the skull. Schatz has always observed this spasm of the internal os whenever brow presentation occurred, and has even tested its force with the dynamometer. The history of such labors is that the head, rather small in comparison with the pelvis, comes down with each pain to the floor of the pelvis and then goes all the way back in the intervals. Heads a little larger may be held in the extended position during a few strong pains and thus become impacted. The characteristic feature of such brow presentations is that, even if efforts at bringing down the occiput temporarily succeed, yet as soon as they are omitted the head again extends and the brow again becomes the presenting part.

Brow presentations are rare; according to Guy's Hospital records, 1 in 1,756 labors. They are the most dangerous and difficult of all head presentations. In most cases impaction occurs unless the head is small. The maternal mortality is 10 per cent and the fetal 30 per cent.¹² Heinricius¹³ gives these figures as 17 per cent and 33 per cent, respectively.

In the Obstetrical Clinic at Moscow,¹⁴ out of a total of 8,330 births from 1887 to 1897, there were 21 face and 18 brow presentations. This makes a proportion of brows 1 to 463, a much larger ratio than other statistics give. The brow cases were treated as follows: by version, 10, of which 1 child died and 1 mother had a septic uterus afterward; 1 by forceps at the outlet, on account of weakening pains (mother and child well); 1, a twin weighing 2,430 grammes, was born spontaneously; 1 by changing to an occiput presentation by means of the forceps, with happy results for both parties; 5 by artificial changing of brow to face by traction on the upper jaw. Of these last 5 cases all had the brow to the front, so that they were changed to mentum-anterior positions. In that clinic version is preferred in brow presentations if possible, but, if not, alteration into a face.

I report a rather interesting case of impacted brow in which Dr. Denslow Lewis and I performed symphyseotomy. The patient was a plump and vigorous primipara, age 35 years, who had been married fourteen years. The pregnancy was without particular incident and its termination was looked for April 7, 1895. She noticed no settling of the fundus. Complete pelvic measurements were unfortunately not obtained, but the conjugate was estimated to be $4\frac{1}{4}$ inches. On external examination the head was found to be below, the back to the front and right, and the fetal heart beat near the median line, two inches below the navel.

Labor pains began about noon of April 22, but were not severe enough to cause her to send for me until after midnight. The vertex was found in the lower segment but not engaged. Vaginal examination showed the os dilated to the size of a quarter, membranes intact, and the brow presenting with the chin high up toward the back and the left. The patient was kept on the left side for two hours;¹⁵ attempts were made to push the brow back so as to allow the occiput to engage; the knee-chest posture was tried, as was external flexion by pressing upon breech and chest of child,¹⁶ and the hand was passed in to pull down the occiput (Baudelocque). While all these

maneuvers succeeded in part and temporarily, yet the malposition returned again each time. No attempt was made to convert into a full face presentation, because I feared the possible persistent posterior position of the chin more than the condition already confronting me. Meanwhile the membranes ruptured, the os completely dilated, and the head came down into the pelvic brim and became impacted. With the aid of Drs. Denslow Lewis and S. C. Plummer, Tarnier forceps were applied, but no justifiable force would move the head. Symphyseotomy was then decided upon.¹⁷ An incision was then made by Dr. Denslow Lewis over the pubes, a probe-pointed bistoury passed above and behind the joint, and the incision made from above downward and outward. The tissues were very hard and the utmost difficulty was experienced in cutting through the cartilage of the joint, which, indeed, seemed ossified. After wearing out the fingers of both of us the incision was finally accomplished. As the bones separated upon cutting the ligamentum arcuatum, a tear occurred in the mucous membrane between the clitoris and urethra, communicating with the wound of incision. The bones separated about two inches and the child was delivered by forceps in a few minutes. The chin rotated toward the left and came out under the pubes. A tight, stout muslin bandage was fastened about the hips. The convalescence was without particular incident. The child had the distorted head peculiar to a brow presentation, but soon acquired the normal appearance and is now living and in good health.

The accident which happened to us, of a tear in the anterior vagina, is obviated by Harris¹⁸ by not cutting the ligamentum arcuatum and therefore not letting the bones separate so much. Unless, however, this is cut, in many cases the bones will not separate enough. Of course version performed before the waters had drained away would have obviated the necessity of a symphyseotomy. I trusted, however, to posture and external manipulations to accomplish flexion until the waters drained away, after which the uterus speedily contracted firmly and the head became impacted in the superior strait. By the time I had abandoned these methods of changing the presentation, the time for version had gone. It is worth while to add, also, that Pinard considers symphyseotomy no more dangerous than version.

To summarize, I may say that, in impaction of the presenting part of the fetus within the pelvic canal, traction with

forceps or otherwise should first be tried, except in cases of monstrosity or in transverse shoulder presentations, in which cases embryulcia is our proper resource. If justifiable force in traction fails to move the fetus, symphyseotomy remains if the child is living, and a mutilating operation if the child is dead.

103 STATE STREET.

REFERENCES.

1. HERMAN: Difficult Labor.
2. GRANDIN AND MARX: Sajou's Cyclopedia, vol. v.
3. LEWIS: Craniorhachischis. American Gynecological and Obstetrical Journal, April, 1900.
4. TOWNSEND: Boston Medical and Surgical Journal, vol. cxxi.
5. DE LEE: Transactions Chicago Medical Society.
6. PERRET: Obstétrique, November, 1899. Trans. in Obstetrics, 1900.
7. AHLFELD: Lehrbuch der Geburtshülfe.
8. HERMAN; Loc. cit.
9. WEBSTER: Practice of Obstetrics by American Authors; Jewett.
10. GRANDIN AND MARX: Loc. cit.
11. SCHATZ: Centralblatt f. Gynäk., 1899.
12. EDGAR: Glasgow Medical Journal, March, 1890.
13. HEINRICIUS: Ueber Stirnlagen und deren Behandlung.
14. SOLOWIEFF: Centralblatt f. Gynäk., 1899.
15. HERMAN: Loc. cit.
16. SCHATZ: Archiv. f. Gynäk., Bd. v.
17. VALLOIS: Arch. de Tocologie, 1894.
18. HARRIS, M. L.: AMERICAN JOURNAL OF OBSTETRICS, 1894.

THE MUTILATING OPERATIONS IN OBSTETRICS.

BY

C. S. BACON, M.D.,

Professor of Obstetrics in the Chicago Polyclinic, etc.

FROM personal observation, and especially from conversations with many physicians who attend the Polyclinic courses, I am firmly convinced that the operations of craniotomy and decapitation are made much less frequently than is demanded by good obstetrical practice. I find that but few physicians are furnished with a perforator, cranioclast, or decapitator, and very few have had any practice on the manikin with these operations. As a result the high forceps are often applied to a child that is dead, without much regard to the preparation of the cervix, and very serious or fatal injuries result. Because of the neglect of this very important subject, I am glad to discuss it before this meeting of general practitioners.

Mutilating operations are generally indicated in cases of obstructed labor in contracted pelves where the child is dead. Obstruction in the soft parts—for example, incomplete dilatation of the cervix, or stenosis of the vagina or vulva due, perhaps, to scar formation—may sometimes furnish the indication. If the child is dead and there is urgent reason to end labor before the obstetrical canal is prepared, an operation which reduces the size of the child is decidedly preferable to forceps or turning and extraction, which involve the risk of serious maternal injuries.

The perforation or decapitation of the living child is becoming less frequent as the results of high forceps operations, Cesarean section, and symphyseotomy are improved, yet it is not possible to make a rule condemning the operation in every case. Every one is liable to find himself in a situation where he must choose whether he would advise a woman to assume the risk of a serious operation like Cesarean section or symphyseotomy for the doubtful chance of rescuing a child known to be very feeble by its weak and abnormally rapid heart tones. Or one may have an infected mother, to whom a Cesarean section would be very serious. One must also consider the circumstances and surroundings of the patient, which may practically preclude all thought of a section. Moreover, the operator's own surgical ability or the possibility of obtaining surgical assistance must be taken into consideration. Under unfavorable circumstances, when the mother and father object to any operation involving serious risks to the mother, the operator may be compelled to sacrifice the child. Fortunately, however, the indications for a mutilating operation on the living child are now so rare that in probably nine-tenths of all cases it is done only on the child already dead.

Adhering to the indications already given, according to which contraction of the pelvis is the most important factor in producing the condition calling for the operation, the frequency with which it should be done would correspond in general to the frequency of contracted pelves. Contrary to the general opinion that this abnormality is more rare in this country than in Europe, the recent exact measurements made in several hospitals and dispensaries show that we have our fair share of contracted pelves. In this connection it is interesting to notice also that in the reports of the Chicago Health Department the number of still-births which are largely due to protracted or tedious labors is from 7 to 10 per cent of the

total number of births reported. The statistics of both perforation and decapitation in the various European clinics vary much. In the absence of any statistics of private practice in this country it is quite impossible to say how often the operation is performed. I believe the statement can be successfully defended when it is affirmed that perforation is indicated once in from 100 to 500 cases of labor and that decapitation is indicated about once in 1,000 cases.

Since the death of the child is of such great importance as a condition for the operation of perforation or of decapitation, the determination of the question becomes very important. The auscultation of the fetal heart tones is the first thing to do. If the physician has been present in the early part of labor, he should have determined the position of the child and the location of the area where the fetal heart is best heard. If this has not been done he must go carefully over the whole abdomen. I have better success in finding the heart tones by using a phonendoscope than a stethoscope. The ear applied directly to the skin is better than a stethoscope. During the examination any fetal movements are discovered. If the heart was previously heard plainly and the sounds have since disappeared, we may feel quite certain that the child is dead. In case of doubt it is possible to obtain certainty by introducing the hand into the uterus and examining the umbilical cord for pulsation. In this examination the possibility of rupturing the uterus by the introduction of the hand must be borne in mind when the lower uterine segment is much distended.

Among the most urgent conditions that call for interference and determination or decision for perforation or decapitation, as the case may be, is this distension of the lower uterine segment. Since I am confident that this condition is often overlooked by many physicians, I must emphasize its importance and say a word about its diagnosis. If the bladder is empty and the abdomen uncovered, one may often see the line between the thick fundal portion of the uterus and the thin lower segment as it shows through the thin abdominal wall somewhere between the symphysis and the umbilicus. The hand placed over the abdomen easily distinguishes the separating ridge. The higher the line the greater is the danger from rupture of the lower thin segment.

In coming to speak now of the different operations, and first of craniotomy, I do not propose to go into the details of the

technique, but only to consider some of the points in dispute and show what I consider the best instruments.

Taking up first craniotomy on the presenting head, we must not forget that perforation and extraction are two separate operations. When delivery is not urgently indicated there is no reason why it should not be left to Nature, after the head is made smaller by perforation and removal of the cranial contents, provided the degree of contraction is not so great as to render natural expulsion impossible or extremely doubtful. There can be no question that this course would avoid tears in the genital tract.

When extraction was necessary we formerly had to choose between the cranioclast and the cephalotribe. You know the disadvantages of each. The application of the cephalotribe was troublesome and dangerous because of the difficulty of seizing and compressing the head. The cranioclast was more easily applied, and in cases of pelves of fair size a model instrument, but when there was considerable disproportion between the head and the pelvis it easily tore out the portion of bone, leaving the rest of the head. To avoid the objections attached to both instruments Auvard has constructed his combined cranioclast and cephalotribe, which is certainly a very powerful and satisfactory instrument. With this one may crush not only the roof of the skull, as with the cephalotribe, but also the base. This instrument has been variously modified to increase its effectiveness. The middle blade has been sharpened at the end to fit it for a perforator. This sharpened end has been provided with a double screw, that it may fasten into the bone opposite its point of entrance. Prof. Zweifel has changed the lock axis from the middle blade to one of the outer blades, in order that the two outer blades may be used as a cephalotribe for the aftercoming head. Prof. Fehling has constructed a four-bladed instrument that may be used either as a cranioclast or as a combined instrument and adapted to seize the head in all positions.

The introduction of the three-bladed instrument has led the Vienna school, which has always used the cranioclast, to defend their instrument, and has stimulated Peters to invent a modified cranioclast which has a longer outer blade and a perforating inner blade. It is also claimed for this instrument that it can be used to crush the base of the skull. So far as I know, this instrument of Peters, which, according to the

reports, is very efficient, has never been introduced into this country. The Auvard instrument is now kept by all stores, and can be recommended as complete and efficient and one that will never leave the operator in the lurch.

The perforation of the aftercoming head is not as frequently indicated here as in Germany, for we do not turn for contracted pelvis as often as the Germans. There is by no means general agreement as to the best place to perforate the aftercoming head, some recommending the perforation of the occiput, which lies next to the symphysis pubis, and others recommending the perforation through the neck and base of the skull next to the sacrum of the mother. Without going into a discussion of the advantages and disadvantages of each of the methods, I would advise the perforation next to the symphysis pubis at the most accessible point of the skull. This can be done by the sharpened middle blade of the Auvard instrument. If one chooses the route through the neck he must use the shears of Levret or Naegele. In the majority of cases the extraction of the aftercoming head, after the evacuation of the brain, can be accomplished by direct traction on the neck and head after the method of Smellie. Should this fail I believe there is no danger in the use of Auvard's instrument.

It sometimes happens that after the delivery of the head the shoulders offer great resistance to the delivery of the body. This is particularly the case in well-developed anencephalous monsters. Here Von Herff and Phaenomenoff have proposed to cut or break the clavicle on one or both sides and thus reduce the circumference of the chest around the shoulders. This procedure, called cleidotomy, is a simple and valuable contribution to our means for aiding difficult labor in dead children. I use for this purpose a pair of heavy veterinary shears.

The recognized indications for decapitation are impaction, in a case of neglected cross-presentation, or a dangerous distension of the lower uterine segment. To these indications I would like to add one that, so far as I know, has not been acknowledged—namely, a serious contamination of the presenting arm—and will illustrate by a case. It was in one of the dirtiest houses I have seen for some years. The assistant was called shortly after rupture of the membrane with the prolapse of the arm. He at once called me, and I saw the patient within two to three hours of the expulsion of the arm,

before impaction had occurred and before any serious distension of the lower uterine segment. The arm, however, was so thoroughly contaminated by the filthy bed that it seemed more dangerous to push it back into the uterus in the operation of turning than to decapitate and extract the head.

Since the introduction and general employment of the Braun hook, about forty years ago, this instrument has nearly superseded all others. Recently its dangers and disadvantages have been again discussed as the result of the introduction by Prof. Zweifel of a modification designed to take its place. This instrument of Prof. Zweifel is a double hook turning about an axis. It is claimed that it makes much easier and less dangerous the dislocation of the neck. In the defence of the Braun hook it is claimed that the dangers from its use arise from the failure to carry out the directions given by the inventor. The directions considered most important are those pertaining to the choice of the hand which is introduced to grasp the neck and protect the hook, and the proper direction of the rotation of the hook. The neck should always be grasped by the hand corresponding to the side of the mother on which the head lies, and the hook should be turned first from side to side to dislocate the neck, and then rotated several times in one and the same direction, always with the end of the hook toward the head of the child. I believe that when the operator keeps constantly in mind the possible danger of the hook and carries out exactly the directions for its use, it is the most efficient and least dangerous of all instruments designed for this purpose.

An interesting proposition has been made by Kosminski, of Cracow, for the performing of the mutilating operations according to more strict surgical principles. By the methods now in use a certain danger attaches to the introduction of the hand into the vagina. This may be avoided by the use of large retractors, through which one may perform the various operations as he would a gynecological operation. Especially for the rarer cases of exenteration this proposition of Kosminski seems to me worthy of imitation and adoption.

CESAREAN SECTION AND PORRO'S OPERATION.

BY

CHARLES B. REED, M.D.,

Lecturer on Obstetrics, Northwestern University Medical School; Attending
Obstetrician, Chicago Lying-in Hospital and Dispensary,
Chicago, Ill.

THE frightful mortality which attended the old Cesarean operation was responsible for the almost universal substitution therefor at one time of the Porro method, which showed itself to be the safer procedure, since the large wound in the uterus, in direct relation with the peritoneal cavity, was replaced by the small stump which was easily accessible in the lower angle of the abdominal wound. With changing conditions surgical art so far advanced that the two operations are no longer competitors in the same field, but rather one supplements the other. The indications are definite in each case and rarely conflict.

Indications for Cesarean Section.—The indications are usually divided into absolute and relative—absolute when there is no alternative and delivery cannot be effected, and relative when there is a choice between this and other procedures.

The absolute indications are:

1. Contracted pelvis. Flat pelvis with conjugata vera 6.5 centimetres ($2\frac{1}{2}$ inches) and child living; generally contracted pelvis 7 ($2\frac{3}{4}$ inches) to 7.5 centimetres (3 inches); or pelvis with 5.5 centimetre ($2\frac{1}{4}$ inch) conjugata vera and child dead.
2. Presence of large bony growths (exostosis) in pelvis.
3. Extreme atresia of lower genital tract, either congenital or acquired.
4. The occurrence of a grave accident in labor, as rupture of the uterus or sudden maternal death.
5. Carcinomatous degeneration of cervix or vagina.

The relative indications are more difficult to formulate and must be determined usually according to the requisites of each case.

Cesarean section competes with symphyseotomy when the child is alive and the conjugata vera varies from 6.5 ($2\frac{1}{2}$ inches) to 7.5 centimetres (3 inches). Craniotomy must be chosen in

all cases where the child is dead and the conjugata vera of the pelvis will permit the delivery of the mutilated child.

The Prognosis.—The prognosis depends chiefly upon the condition of the mother at the time of operation, but is subject to many influences, such as the skill and experience of the operator, the circumstances attending the individual case (assistants, place of operation, etc.), so that only general results of somewhat uncertain value can be given.

Leopold and Haake find that gonorrheal infection, latent or subacute, exercises a very unfavorable influence upon the subsequent course of Cesarean section, and hence in these cases either craniotomy or Porro's operation is advised. Nephritis and anemia of a high grade are also contraindications, according to these authors.

The unfortunate features of Cesarean section which sometimes arise, aside from fatal issue, are due to suppuration of the uterine sutures and the formation of adhesions between uterus and abdominal wall, which subsequently cause trouble during menstruation. The maternal fatalities occur usually from hemorrhage or sepsis and may be roughly estimated at from 5 per cent to 10 per cent; fetal mortality, 6 per cent (Bar).

For the Porro operation statistics vary; some authors give as high as 48 per cent to 50 per cent. Harris, of Philadelphia, gives in 400 cases a maternal mortality of 27.75 and a fetal mortality of 18.25 per cent. It is only fair to state that in Porro's own cases he has nearly one hundred per cent of recoveries. The mortality in the operation could be greatly diminished if the conditions given by Reynolds were generally observed—*i.e.*, "when maternal vitality has been seriously lowered either by septic infection, prolonged labor, or complicating disease, the mortality of Cesarean section is so high that it is an unjustifiable operation, and in such cases symphyseotomy should be done if applicable; if not, then craniotomy on the living child in behalf of the mother.

"Second, when the mother is in good condition generally, sound and uninfected, not exhausted by long labor or prolonged attempts to deliver by forceps, Cesarean section is so safe an operation that it may be used unhesitatingly in cases at term whenever intrapelvic delivery would be fatal to child, and may often be preferred to induction of premature labor on account of its superiority in saving fetal life."

Time of Operation.—The operation may be performed

either before or during labor or after the mother's death. As an operation of election the most desirable time under any of the absolute indications is at term or when the labor pains begin.

In those cases where the patient is not seen until labor is under way, the operation should be performed as early as possible, to avoid the profound exhaustion that invariably attends neglected cases and seriously adds to the mortality.

Preparations.—The preparations are the same as for any laparotomy. Four assistants are desirable, one for anesthesia, one to assist the operator directly, one to attend to instruments and sponges, and one to take care of the child. The abdomen, pubes, and vagina (when septic) are sterilized to the last degree, bladder emptied, and for the conservative operation a drachm of ergot is injected hypodermatically by some operators. The Trendelenburg posture is more satisfactory for the Porro operation, although this is a matter of personal option.

Incision.—Incision in abdomen should be from six to eight inches long and is made directly over the most prominent part of the uterine enlargement and in the median line. Extreme care must be used to avoid cutting too quickly through the abdominal wall, since, owing to the distension and pressure, it is much thinner than usual and there is danger of cutting prematurely into the uterus and even injuring the fetus.

After opening the peritoneum the uterus comes quickly into view and is delivered by the left horn through the abdominal wall (the incision of the uterus within the abdomen is preferred by many). The intestines are carefully protected by warm gauze sponges and towels, and the assistant keeps the abdominal walls in close contact with the uterus while two or three sustaining sutures are passed through the abdominal wall behind the uterus.

The cervix is now grasped by the assistant as low down as possible, and compression made on the arteries to prevent hemorrhage. Rapid examination determines the site of the placenta, and, avoiding this, but as near the median line as possible, a small incision is made in the uterus, and, passing the fingers through it, the wall is torn as far as necessary. The child is seized by one or both feet and delivered.

If the operation is not one of election it may happen that the head is wedged in the pelvis and some force must be used, possibly assisted by a hand in the vagina, to release the head.

The cord is clamped in two places with compression forceps, divided between them, and the child passed to the assistant to be revived. The uterus is briskly rubbed to induce firm contractions, and if placenta is not thereby released it is grasped with the full hand and gradually twisted away with the membranes. Large pieces of decidua remaining should be removed, but small fragments may be left.

If necessary, the uterus is kept in firm contraction by use of massage, and the deep sutures, fourteen to eighteen in number, of formalin gut, are introduced, passing through all the deeper tissues about half an inch apart. They may be introduced and tied as fast as passed; or they may be passed as a continuous suture, and then the division of the loops gives a series of individual stitches.

The hemorrhage usually ceases quickly when the uterus contracts; if not, the bleeding from the wound is easily controlled by the deep sutures, and slight blanching of the tissues shows when the stitches are drawn tight enough. The row of superficial stitches of fine formalin gut is now passed to accurately coaptate the peritoneal edges. The uterus is now drawn forward while the peritoneal cavity is cleansed, and then replaced with the omentum carefully tucked behind it to avoid omental adhesions. The abdominal wound is now closed as usual, using continuous silk sutures for peritoneum and interrupted sutures for fascia, muscles, and skin, the line of incision in the latter being sealed with collodion dressing.

The entire operation should not last over an hour.

For the Porro operation the indications may be classified as follows:

1. All cases where, owing to the general conditions, Cesarean section is indicated and the removal of the uterus is required.
2. When the child is dead and infection of the uterus has taken place.
3. Extensive atresia of the vagina, preventing discharge of lochia.
4. Carcinoma of the cervix.
5. Atonia uteri or uncontrollable hemorrhage from placental site.
6. In cases of ruptured uterus where suture is unsafe.

The Porro operation has been expanded to include all operations which terminate in the supravaginal amputation of the

uterus. In this operation a rubber ligature may be placed around the cervix and the operation conducted as before up to the detachment of the placenta, which may be left if desired.

The ovarian vessels are successively ligated near the brim, clamped near the uterus, and severed between. The round ligaments are also tied and divided. The vesical peritoneum is next separated from the uterus, and bladder and peritoneum are pushed down back of the symphysis.

The uterine arteries are now tied, and, if total hysterectomy is not indicated, the uterus is amputated about three-quarters of an inch above the constricting ligature. The cervical canal is carefully sponged out, possibly touched with iodine or carbolic acid, and the anterior and posterior lips sutured, and the whole closed in by uniting the anterior and posterior layers of the broad ligament and the vesical peritoneum and attaching the same to the cervical stump by continuous or interrupted catgut sutures.

If total hysterectomy is necessary, as in the case of cervical carcinoma, the uterine arteries are tied near their origin from the internal iliac, and a careful dissection is made downward from this point to secure the removal of as much of the cellular tissue and glands as possible, being continually alert to protect the ureters. When the vaginal vault is reached the pelvic peritoneum should be guarded on all sides by gauze sponges before the vagina is divided.

The uterine mass is lifted out and the anterior and posterior walls of the vagina are united with catgut sutures, the broad ligaments and peritoneum treated as before. Weak iodoform gauze is packed loosely into the vagina and the abdominal wound is dressed as before.

The advantages of the Porro method over the conservative operation lie somewhat in the rapidity of the work, but more in the prevention of hemorrhage post partum and the diminished chance of infection. It must be kept in mind, however, that the conservative operation is the ideal one and should always be done unless the Porro is positively indicated.

The operations as described are according to the surgical sense of to-day, but some innovations in technique must be noted which are strongly advocated, as, for instance, the Fritsch incision made transversely in the fundus of the uterus. It is claimed by the advocates of this method that the child delivers much more easily, the risk of subsequent hernia is reduced, the abdominal wound is higher, sutures are more easily placed, subsequent scar is firmer, and fluids are prevented from enter-

ing the abdominal cavity, while the passage of sutures across the path of the vessels instead of parallel with them favors hemostasis. It is also claimed that there is less chance of cutting the placenta, since Bidder found a fundal implantation of the placenta only eight times in 139 cases. Hahn, however, cut the placenta with this incision three times in 11 cases. Steintal also maintains that the Fritsch incision does not always permit the extraction of the fetus and an additional longitudinal incision is sometimes required. Another author (Cryzewicz) claims that the Fritsch incision results in uterine atony. Everke, with an experience of 25 cases, finds that the wound heals badly because the vascular supply is interfered with, that secondary infection is probable, and that there is a greater chance of visceral adhesions. Müller also advocates a sagittal incision at the fundus. But these various methods simply demonstrate that the point of the incision or the direction thereof exerts no appreciable effect on the case if the technique is perfect.

It would seem desirable to avoid, if possible, the placental site, but even this has been incised accidentally many times without serious results, and one author goes so far as to recommend it, claiming the delivery of the placenta is greatly facilitated.

The Dührssen vaginal Cesarean section, however, presents a new phase of the question, and is performed by incision of the anterior and posterior vaginal walls at the junction with the uterus; separation of bladder and vesical and posterior peritoneum follows; arteries and broad ligaments are clamped or crushed; incision of anterior and posterior walls of cervix and lower uterine segment to internal os; hemorrhage being controlled, the hand is introduced; extraction of child and placenta follows, with subsequent suture of the wound.

He advocates this operation in: 1. All abnormalities of cervix uteri and lower uterine segment which render dilatation difficult or impossible (carcinoma, myoma, rigidity, stenosis, etc.). 2. Danger to mother which the rapid emptying of the uterus will relieve (disease of heart, kidneys, and lungs). 3. Conditions of danger to mother which presumably will cause death.

The operation has been done eleven times with three deaths. It is contraindicated in all pelves of less conjugata vera than $3\frac{1}{4}$ inches (8 centimetres), also in placenta previa. It should never be attempted without facilities equal to those of a hospital or without practised assistants. It supplements rather than supplants the classical operation.

A case of suddenly discovered cervical carcinoma, the woman being near term and having no pelvic contraction, presents the operation in its most favorable aspect, and after delivery of the child vaginal hysterectomy can be done.

Rigidity of cervix is somewhat more questionable as an indication, unless high up, say at Bandl's ring. Scar tissue in lower uterine segment, according to Strassmann, presents an element of danger in subsequent pregnancies. However, the operation marks an advance in technique and will be useful under strict conditions.

In conclusion, another point that should be considered in justice to the woman is the problem of future sterility. This question should be definitely determined by discussion in advance; and before the abdomen is closed, if this is decided upon, the tubes should be removed in all those cases where the conservative operation is done. The occurrence of another pregnancy should be effectually prevented, if possible, as in many cases, unless this is done, the woman is hurried on helplessly and involuntarily to another laparotomy.

COLUMBUS MEMORIAL BUILDING.

SYMPHYSEOTOMY IN ILLINOIS.

BY

G. N. KREIDER, M.D.,
Springfield, Ill.

PROFESSIONAL opinion regarding operations and procedures has its periods of ebb and flow. At one time an operation may occupy much of the professional horizon, at another time be in a state of partial or complete eclipse. Preconceptions and prejudices influence our judgment more than most of us care to admit. No operation illustrates the truth of this remark better than the operation of symphyseotomy. When first proposed in Paris by Sigault in 1768 it was ridiculed. In 1777, after he had performed the operation and saved both mother and child, the medical profession of France considered the operation in the highest tribunals and became divided into Cesareanists and symphyseotomists. The "wild scheme of the ignorant youth" was recognized by a pension and medal from the government of the country.

The enthusiasm of the first successes having died away, the operation fell into disfavor and for many years was unheard of. The modern revival, dating from January, 1866, is due to

the efforts of surgeons in Naples, Italy. Their Cesarean sections showing a frightful mortality, they renewed symphyseotomy and succeeded in saving 60 out of 70 mothers and 62 out of 70 children. The attention of American surgeons was called to the operation by that eminent writer, Robert P. Harris, of Philadelphia, of blessed memory, and since 1892 operations have been made by many surgeons in the United States and Canada. It will not be my purpose to present statistics of the operators in all parts of the world or even this country. As nearly as possible I wish to give a résumé of the work done by operators in Illinois, the sole exception being that I will mention the work of Dr. Edward A. Ayers, of New York, my valued friend and classmate. Dr. Ayers has written valuable papers on this subject and invented a knife and a method which facilitate the operation and after-treatment.

As were the profession of France in the eighteenth century, so the operators of to-day are divided into Cesareanists and symphyseotomists. Reviewing the field in a critical way, it would appear that the enthusiasm of some writers of 1893 and 1894, myself among the number, has not influenced the general adoption of the operation. I believe, however, that symphyseotomy has a place in our list of obstetric procedures. Like any and all operations on puerperæ, there are great dangers connected with it, and deaths have occurred which are very disagreeable to the mental condition, the reputation, and the statistics of the operator. But as Prof. Zweifel, of Leipzig, said at Moscow: "Is there no danger connected with Cesarean section?" Truly, I believe it might be said that Cesarean section, prolonged efforts with the forceps, and embryotomy have destroyed lives of both mothers and children which might have been saved by the employment of symphyseotomy. Of these deaths we hear little; the grave has covered them from sight, and convenient forgetfulness prevents them from getting into print. If we hear of a death after symphyseotomy we are apt to condemn the operation at once and for all time.

Thus considered, I must array myself among those who believe symphyseotomy has a place, somewhat limited, in obstetric surgery. I entirely agree with Dr. Webster in his statement and here repeat his

"Indications for Symphyseotomy.—This operation is best regarded as an adjuvant to delivery by the axis-traction forceps. It may, therefore, be employed, speaking generally, where forceps delivery in the Walcher position is impossible,

and where there is no doubt that the increased pelvic measurements resulting from the operation will allow the head to be extracted.

"It may be tried:

"1. In cases of pelvic contraction. Most authorities mention a limit of 2.6 to 3.2 inches in flat pelves and 3.2 to 3.9 inches in justo-minor pelves. It is evident, however, that the employment of the axis-traction forceps in the Walcher position must make unnecessary, in a considerable proportion of cases, the cutting operation.

"It is also clear that symphyseotomy at full time must greatly diminish the necessity for inducing premature labor in cases of pelvic deformity. For a living child delivered at term by the axis-traction forceps, with the aid of a symphyseotomy, is preferable to a premature delivery, with its risks and the uncertainty with regard to the rearing of a weakly child.

"2. Symphyseotomy also has a place in impacted brow and face cases where delivery cannot be safely carried out with axis-traction forceps and the Walcher position.

"3. In cases where the head is abnormally ossified or a little enlarged and delivery cannot be effected by the axis-traction forceps and the Walcher posture."

TABLE OF SYMPHYSEOTOMIES PERFORMED IN ILLINOIS.

No.	Date of operation.	Place.	Operator.	Age, Conjugate.	Presentation.	Result to woman.	Result to child.
1	Dec. 16, 1892	Paris....	H. McKennan..	31 2 ³ / ₄	Vertex	Recovered. ...	Alive.
2	March 2, 1893	Springfield	G. N. Kreider..	26 3 ³ / ₄	Vertex ...	Died of septicæmia 11 days after operation.	Dead before operation.
3	May 3, 1893	Chicago..	H. P. Newman..	29 3 ³ / ₄	Vertex	Recovered.....	Alive.
4	May 23, 1893	Chicago..	A. Goldspohn..	30 1 ³ / ₄	Vertex	Recovered.....	Lived three hours.
5	Sept. 1, 1893	Chicago..	S. Leavitt. ...	30 3 ³ / ₄	Vertex	Recovered. ...	Alive.
6	Nov. 24, 1893	Chicago..	B. Robinson..	27 3 ³ / ₄	Vertex ...	Recovered. ...	Alive.
7	Dec. 19, 1893	Chicago..	T. J. Watkins..	43 ..	Vertex	Died in 12 hours.	Died.
8	Feb. 17, 1894	Chicago..	H. Banga.....	35 2 ³ / ₄	Transverse	Recovered.....	Alive.
9	June 19, 1894	Chicago..	M. L. Harris... 28 2 ³ / ₄	Vertex ...	Recovered.....	Alive.	Alive.
10	Sept. 20, 1894	Chicago..	M. L. Harris... 28 2 ³ / ₄	Vertex	Recovered. ...	Alive.	Alive.
11	Jan. 23, 1895	Chicago..	A. J. Ochsner..	36 ..	Vertex ..	Died of hemorrhage from varicose veins in vagina.	Died.
12	April 22, 1895	Chicago..	Denslow Lewis.	35 4	Impacted brow.	Recovered	Alive.
13	October, 1896	Macomb.	S. C. Stremmel	39 ..	Vertex.....	Recovered ...	Alive.
14	June 16, 1897	Chicago..	H. P. Newman..	18 ..	Impacted brow.	Recovered.....	Alive.
15	Nov. 4, 1898	Paris ..	H. McKennan..	30 2 ¹ / ₄	Vertex ...	Recovered. ...	Alive.
16	May 11, 1899	Chicago..	J. B. De Lee... 30 3 ³ / ₄	Breech....	Recovered.....	Alive.	Alive.
17	Sept 18, 1899	Chicago..	J. B. De Lee... 23 ..	Vertex. ...	Recovered; funnel-shaped pelvis.	Recovered; funnel-shaped pelvis.	Alive.

A. J. Ochsner writes: "I have performed the operation but once and consequently am not entitled to an opinion based on experience in the matter. I believe that in future I shall perform a Cesarean section in preference, if the child is living."

Joseph B. De Lee: "I think the operation has a legitimate field, but limited. Should only be done in favorable cases, mother and child in good condition, pelvis not too contracted—not less than $7\frac{1}{4}$ to $7\frac{3}{4}$ centimetres—and only in those cases where forceps have failed or show no outlook for living baby."

C. S. Bacon, of Chicago, writes: "I have never done the operation, although I have advised it in a few cases. In one case where the operation was refused by the family, and a high forceps done with such injury to the child that it died within thirty hours, I have no doubt that the symphyseotomy would have saved the child. In cases of not too great disproportion between the fetal head and the pelvis, when the prospect of a spontaneous termination is hopeless or rapid delivery is indicated, if the fetal heart tones show that the child is not very feeble, I believe that symphyseotomy is the operation of choice, provided that the operator has mastered the technique so that he can avoid the immediate dangers of the operation. Aside from these dangers, the great objection is the fear of subsequent disability from an imperfect closure of the pelvic circle. To provide against this danger one must be prepared for a careful and sufficiently continued postural treatment of the woman in childbed. The circumstances of the patient, the nature of her work, her desire for a child, as well as the importance of the child in the family, may also be properly taken into consideration."

H. P. Newman, of Chicago, writes: "I have always been an advocate of the operation, being among the first to perform it in Illinois. It is an important and valuable contribution to major surgery, and is indicated not only in cases of contraction of the pelvis, but in disproportion of the child's head, as in my first case. I believe most of the objections urged against it are ill-founded. I have never seen any undue hemorrhage, sepsis, or mobility result. Even those cases of spontaneous separation of the symphysis, of which I have seen several, two very pronounced, have made perfect recoveries."

Frank B. Earle, of Chicago, in a paper read at the forty-seventh annual meeting of this Society, says in part: "I support a procedure which I believe has a legitimate field in obstetrics midway between Cesarean section and embryotomy."

It should be done as an operation of election, and not after repeated ineffectual attempts to deliver by forceps or version. The simplicity of the operation, the easy preparation, the ready consent of the patient and friends, render it possible of accomplishment where the more formidable section would be absolutely refused or fraught with greater danger. Both maternal and fetal mortality compare favorably with that of induced labor, embryotomy, and Cesarean section."

Denslow Lewis, of Chicago: "My opinion of symphyseotomy is that it is especially indicated in impacted cases when the child is alive and the only alternatives are Cesarean section or craniotomy. In other cases where the gain in the conjugate diameter of a half-inch or so will permit the delivery of a living child, and one that is likely to continue to live, symphyseotomy should be done just as soon as we recognize the improbability of delivering a live child by forceps or version. If women were regularly examined about the seventh or eighth month of pregnancy, the indications for the different obstetric operations would be accurately determined in most instances and impacted cases would rarely occur. It is of importance with symphyseotomy, as with all procedures undertaken for the benefit of a woman in labor, to operate before the patient is exhausted or has become infected by fruitless and irrational attempts at delivery."

Thomas J. Watkins, of Chicago, says: "My patient died as a result of shock and sepsis as a consequence of carelessness and active attempts at delivery, protracted over a period of twenty-four hours, before she was sent to the hospital for my care. The child died. The case was such a hopeless one that it is really an injustice to the statistics of symphyseotomy to include it."

H. McKennan, of Paris: "Symphyseotomy is not so formidable but that it may be performed by any physician of ordinary ability. The patient must be free from sepsis and exhaustion. The technique is immaterial so long as it is clean and expeditious. The after-treatment demands absolute immobility of the divided symphysis and daily inspection and cleansing of the patient. Expensive beds and apparatus are sometimes convenient, but not necessary for the success of the operation. Your patient may be operated upon in her own home, among her own surroundings, and by her own physician."

A. Goldspohn, of Chicago: "My case was undertaken when the patient had a pulse of 140 and temperature of 102°. The soft parts of the pudendum were edematous after five succes-

sive attempts by others with forceps and three different narcotics. The condition of the patient seemed to be too precarious to undertake a Cesarean section. Pelvis was supported by a strong assistant during delivery of child by forceps, but still the severed ends of bone at symphysis separated fully 2 inches and the urethra was torn. Bleeding was stopped by deep sutures. Wired ends of bone together by passing strong needle through the periosteum. Suprapubic gauze drain and vaginal gauze drain. A most alarming feature was uterine inertia after delivery, but the hemorrhage from this cause was moderated by constant vagino-abdominal compression of the uterus, and stopped finally by an interrupted galvanic current applied with a boiled rectal electrode in the uterus and pad on abdomen. Child, with medium-sized head, lived three hours. Autopsy on same showed a tear of scalp and rupture of longitudinal sinus posterior to the anterior fontanelle (evidently from excessive use of forceps before this operation was done). Mother was in bed about a month. Had some temperature and moderate suppuration of soft parts back of symphysis, but regained as good a locomotion as she previously possessed and without movement of bones at the symphysis. I am quite convinced that this patient (a greatly neglected or maltreated case) would not have survived a Porro operation nor a Cesarean section. In this the most difficult thing, the inertia of the uterus, would probably not have been overcome."

Regarding methods of operation adopted by Illinois operators, McKennan made use of a small, probe-pointed metacarpal saw, after the initial incision with a knife, in his first case. In his second case he used a small probe-pointed bistoury. The joint was severed in my case by a probe-pointed lithotomy knife.

H. P. Newman has used the Galbiati knife in his operations.

M. L. Harris has described a method of making this operation in *THE AMERICAN JOURNAL OF OBSTETRICS*, November, 1894, which is in brief as follows: "A free incision is made over the symphysis, terminating a little above the clitoris, and the retropubic tissues pushed carefully away. When the bone is reached the finger should be introduced posteriorly between the recti muscles into the cavum Retzii, and the bladder and peritoneum should be thoroughly separated from the entire posterior surface of the symphysis well down to the arch. As the bones are more widely separated in the front, it will be found easier to open the joint from before backward with an

ordinary scalpel; the finger introduced posteriorly prevents any possible injury to the neighboring structures. The symphysis should always be completely divided until the ends of the bones are held together only by the ligamentum arcuatum and the deep perineal fascia, or so-called triangular ligament. These structures should now be carefully separated from the arch of the pubis by a blunt-pointed bistoury under guidance of the finger, closely hugging the bone on each side. As fast as the tense fibres are divided from the arch it will be seen that the space at the symphysis gradually widens. This I consider the most important step of the operation, and if the ligament and fascia be carefully detached laterally from the bone all danger of hemorrhage and laceration of the soft parts will be effectually avoided."

Finally, a word concerning the operation of our old Illinoisan, E. A. Ayers, of New York, editor of *Obstetrics*, who has kindly favored me with the manuscript of his last paper describing his subcutaneous operation and improved hammock bed. Concerning the subcutaneous operation he says: "1. Secure full dilatation of the cervix before beginning the operation, if possible without risk to the child.

"2. Have the urethra and bladder held to the left side with a sound.

"3. Make the initial incision with a small scalpel, aiming to cut a path upon the face of the symphysis for a probe-pointed bistoury that is to follow, keeping the scalpel close to the bone and under the clitoris.

"4. Substitute a probe-pointed bistoury for the scalpel, after introducing the index finger of the left hand in the vagina against the posterior edge of the symphysis, up to the top, and bring the tip of the finger and the tip of the bistoury together at the top of the joint, then work the blade downward with the left finger accompanying it to within one-fourth inch of the subpubic arch. Then take out the bistoury and invert it, and cut from below up to the separated part, thus avoiding injury to the bulbi vestibuli just beneath the joint.

"5. On removing the knife, the joint being severed, have an assistant press a pad of bichloride gauze over the wound and face of the joint, keeping it there until the child is delivered. This will prevent hemorrhage and lessen liability to infection."

Finally, I will give a description of the Ayers hammock bed, which can be made in a few hours by a gasfitter, or ex-

temporized of wood by a carpenter. It consists of one upper middle canvas on its own poles for supporting the pelvis and bringing the pubic bones in close contact, and a second on its own poles, consisting of two pieces of canvas, for holding the chest and head and the lower extremities, but so spread out that these parts of the body are not cramped in a trough, as is the pelvis. The pelvic hammock is at a fixed elevation, though the poles can be placed close together or apart, and the under hammock is adjustable to the level of the other. The pelvic canvas has an opening six inches in diameter, through which all discharges pass to the bed-pan beneath. The latter is supported against the buttock by a canvas band attached to one of the lower poles on one side and kept taut over the other lower pole by a rubber tube. Extrusion of the buttocks through the hole in the pelvic piece of canvas, and the consequent liability to bed sores, is thus sufficiently opposed without affecting the important function of this canvas in holding the pubic bones together.

A METHOD OF PERFORMING ANASTOMOSIS OF HOLLOW VISCERA BY MEANS OF A NEW INSTRUMENT.¹

BY

M. O'HARA, JR., M.D.,

Gynecologist to St. Agnes' Hospital; Assistant Surgeon to Gynceean Hospital; Chief of Surgical Clinic to Melico-Chirurgical Hospital.
Philadelphia, Pa.

(With thirteen illustrations.)

In presenting a subject such as the title would indicate, I wish to make my position understood and say that it is not my intention to discuss any of the methods that are in use at the present time, but to present an instrument and its application that occurred to me some months ago. It was following this thought and putting it into action that led me to have the instrument made. The forceps which I show you I have put to a thorough and exhaustive test on the lower animals, and my results exceed my most sanguine expectations. It is the knowledge thus obtained that leads me to state that the instrument

¹ Read before the Section on Gynecology, College of Physicians of Philadelphia, April 19, 1900.

and method are both simple and serviceable and possess advantages not to be found heretofore. The instrument is shown so clearly in Fig. 1 that no description is necessary.

Manner of doing a Resection followed by an End-to-End Anastomosis.—The serre-fine clamp is removed and one forceps is placed transversely across the bowel at the point selected to mark the upper border of the resection, and locked; the other forceps is placed in the same manner at the lower margin of the resection; the tip of each forceps should be on an exact line with the mesenteric attachment (see Fig. 2). Then with a

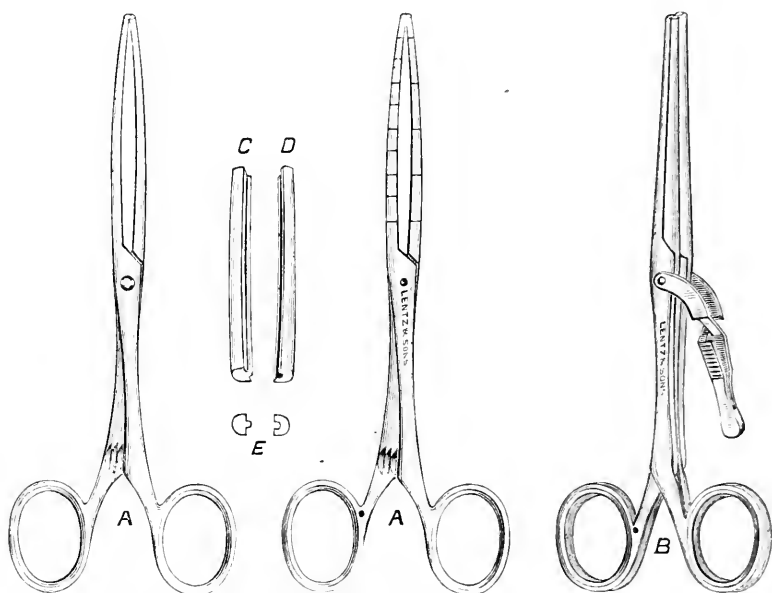


FIG. 1 shows forceps about one-third original size. A, A shows forceps separated; B, held together by cross-acting clamp; C D E shows tongue and groove of blades.

pair of curved scissors or scalpel cut the bowel as close as possible to the forceps (see Fig. 3), the incision being carried into the mesentery so as to remove a wedge-shaped piece. Before making this incision place two forceps on the part to be resected, to prevent any escape of the contents of the bowel. Avoid wounding any important vessel in the mesentery. If bleeding occurs from any of the smaller vessels, a clamp can be placed on it temporarily.

The two forceps are then brought and held together by means of the serre-fine clamp; the sutures are then introduced, starting at the point nearest the lock of the forceps and

carrying them down to the tips (see Fig. 4), where a little care should be exercised to get accurate apposition of the gut at its mesenteric attachment. I have found it necessary at times, where the mesentery was quite dense and broadly attached, to

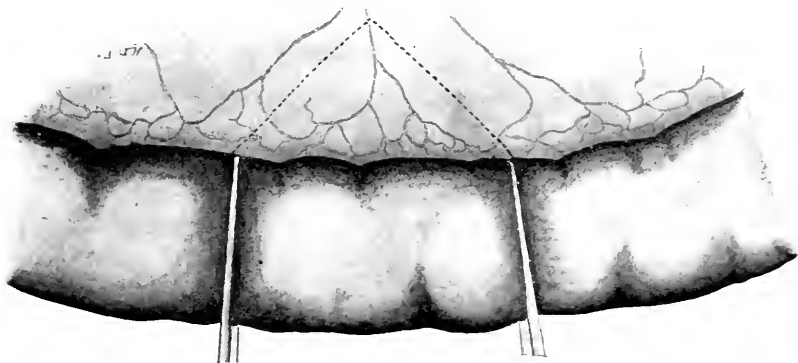


FIG. 2.

nick it with scissors and push it back to allow the bowel to turn in properly. If the mattress suture as used by Halsted has been employed, it is now necessary to tie before proceeding to the other side (see Fig. 5). The forceps are now reversed and sutures are placed in the same manner, only they are

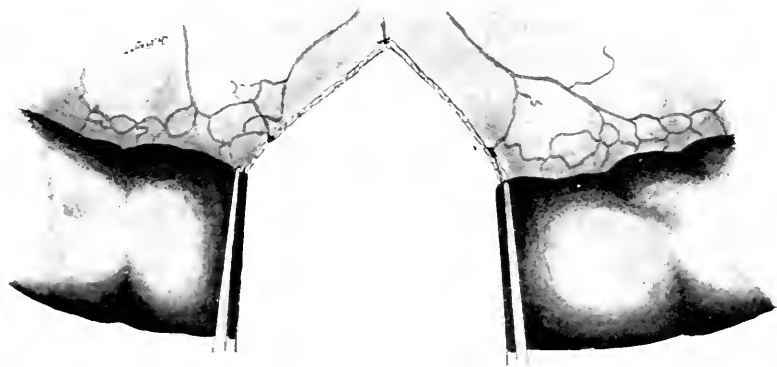


FIG. 3.

started at the tips of the forceps and carried up until the level of the first suture is reached. The forceps are now unclamped and one pair removed by unlocking and drawing them out in a straight line; the other is unlocked and passed above and below the line of suture within the calibre of the gut, to insure

that both walls of the gut have not been included in any of the sutures. They are then withdrawn and the remaining opening is now closed with one stitch (see Fig. 6). If the operator desires he can now run a continuous suture around the first row of sutures. The mesentery is sutured in the usual manner.

Manner of doing Lateral Anastomosis.—The gut is picked

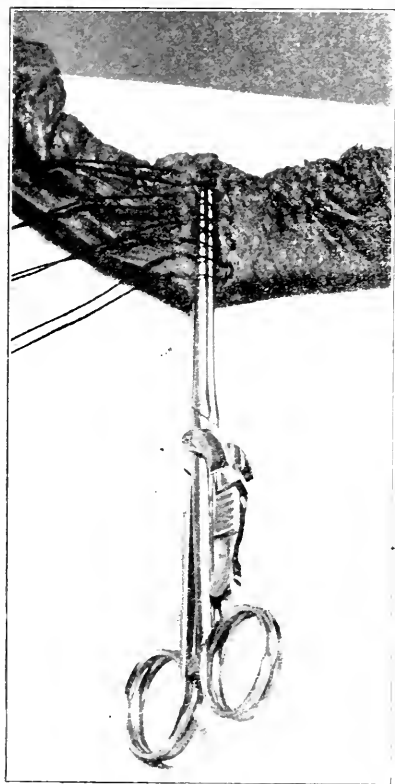


FIG. 4.

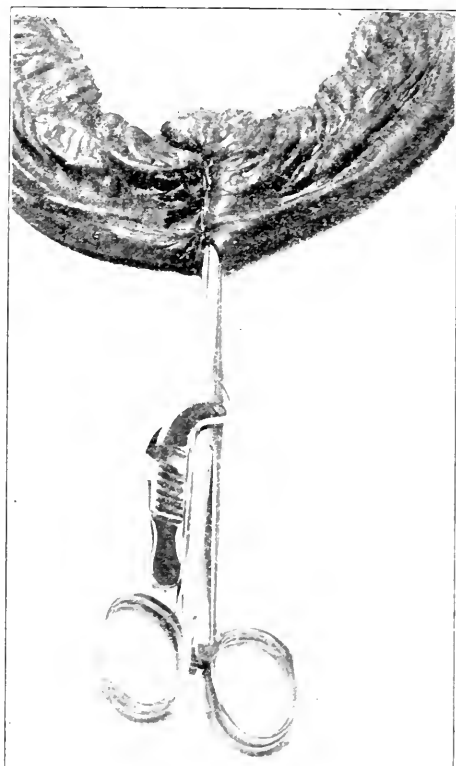


FIG. 5.

up by means of a rat-toothed forceps, and one pair of forceps is placed in a line with the long axis of the gut; the tip must be on an exact line with the edge of the gut (see Fig. 7). The forceps includes just so much of the gut as the size of the mouth one intends to make. The other forceps is placed in the same manner at the point where it is intended to make the other mouth, using care to pick up the same amount as in the first forceps; this can be done by observing the graduated

lines that are on the forceps. Then with a pair of curved scissors cut as close as possible and remove the gut that projects from the forceps (see Fig. 8). The forceps are now brought



FIG. 6.

together and held by the serre-fine clamp. The sutures are introduced from the lock to the tips in the usual manner, using

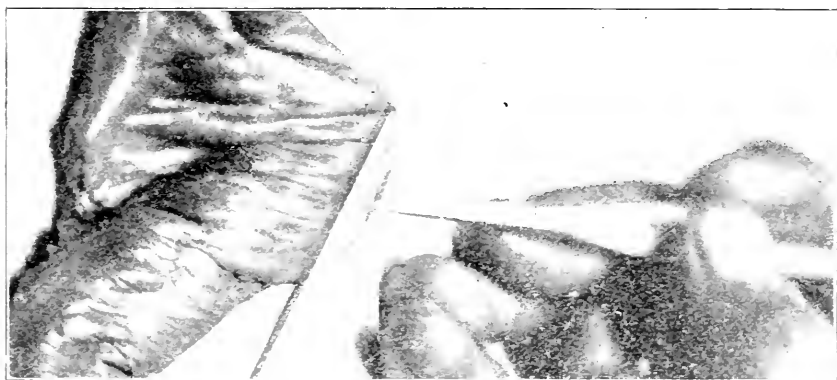


FIG 7.

a little extra care on reaching the tips (see Fig. 9). The sutures are now tied and the forceps reversed. Sutures are placed on this aspect of the gut, from tips toward the lock, to

the level of the first suture. The sutures are now tied and the forceps unclamped, one being unlocked and removed, the other being unlocked and passed to each side of the line of suturing to make sure that both walls of the gut have not been included in any of the sutures (see Fig. 10). The remaining forceps is

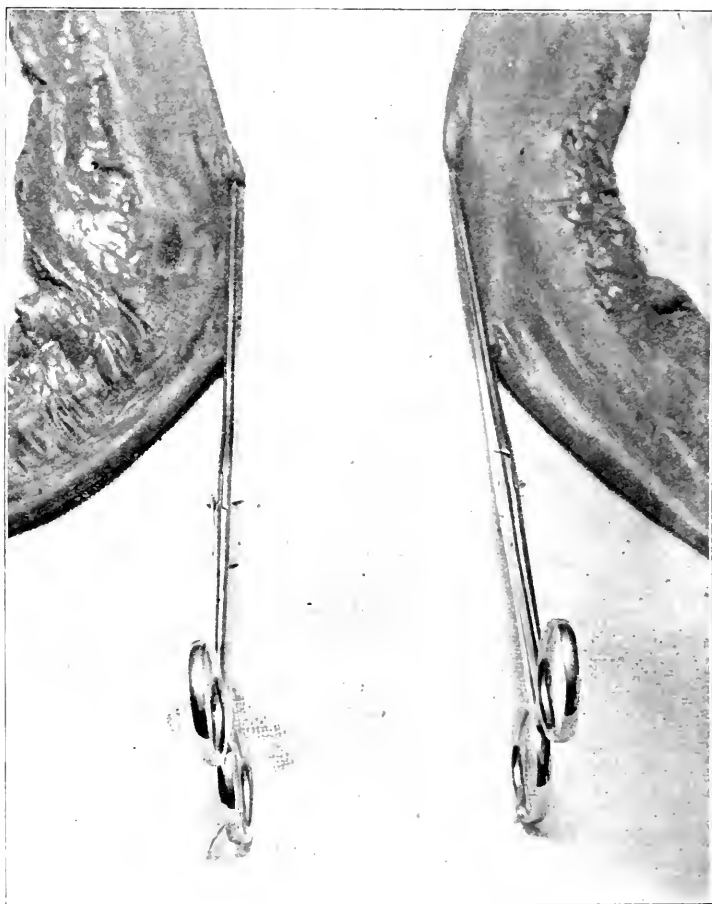


FIG. 8.

now removed and the small opening closed by one suture (see Fig. 11), and, if it is desired, a continuous row of sutures can now be placed to reinforce the first.

The advantages claimed for this method are the rapidity and ease with which it can be done and the lessened risk of secondary contraction, as the mouth made after this manner is a

mouth made by removal of tissue, and it can be made any size the fancy of the operator dictates. Another very strong point in its favor is that the cavity of the bowel is not exposed at any stage of the operation, thereby reducing the dangers of infection to the minimum.

In dealing with the open ends of the bowel after lateral

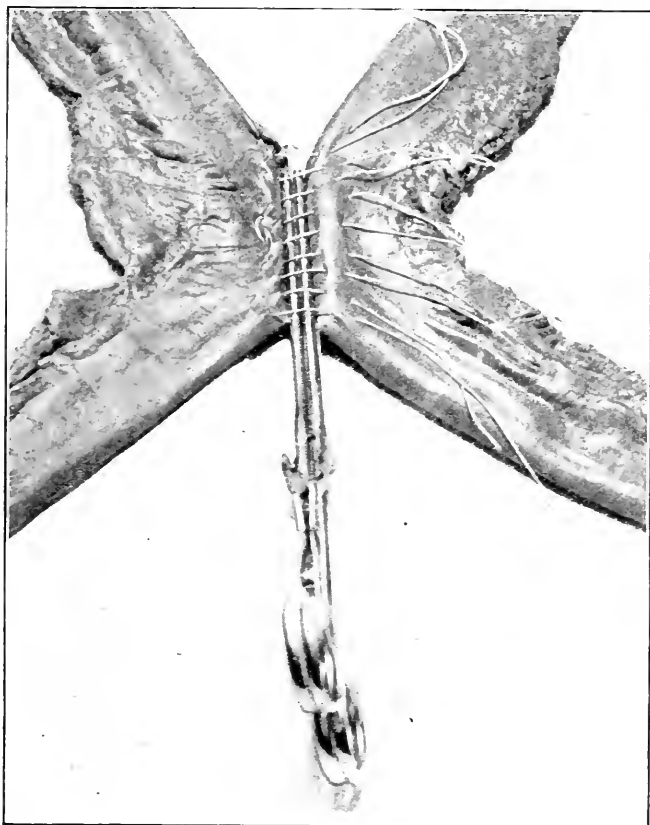


FIG. 9.

anastomosis, one pair of forceps is all that is required. It is placed as in the end-to-end operation and the bowel turned in upon itself and serous membrane stitched to serous membrane. This method is almost identical with that followed by Dr. La Place, except that I place the tip of the forceps on a level with the mesenteric attachment. By placing the forceps in this manner it is only necessary to place one stitch when the forceps is removed.

These forceps and clamp can be used in anastomosis of the gall bladder with the same facility as in lateral or end to-end anastomosis.

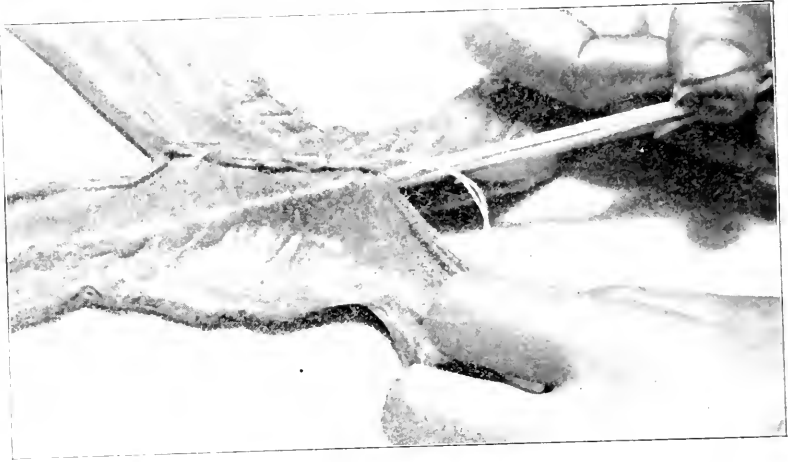


FIG. 10.

They can be used in anastomosing bowel of unequal calibre,

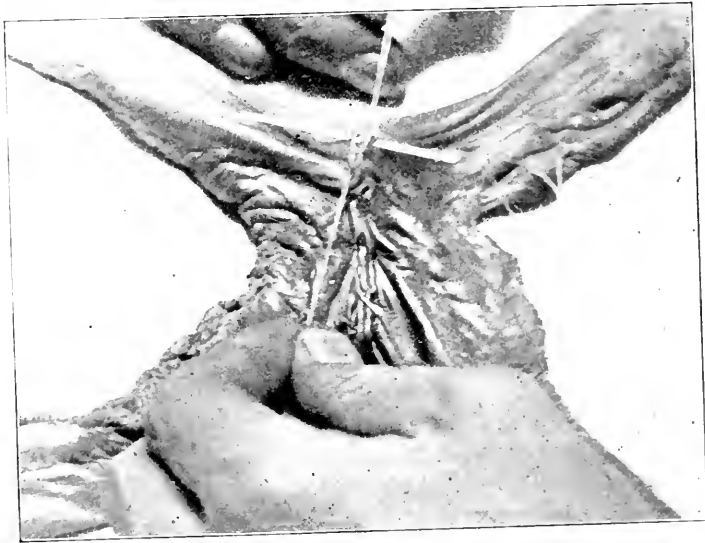


FIG. 11.

as is the case in resecting the cecum, by placing the forceps upon the large gut at the point it is desired to resect and upon a corresponding point of the small gut (see Fig. 12), using care

to place the forceps in such a manner that it corresponds to the point you wish to run it into the large gut. The forceps are

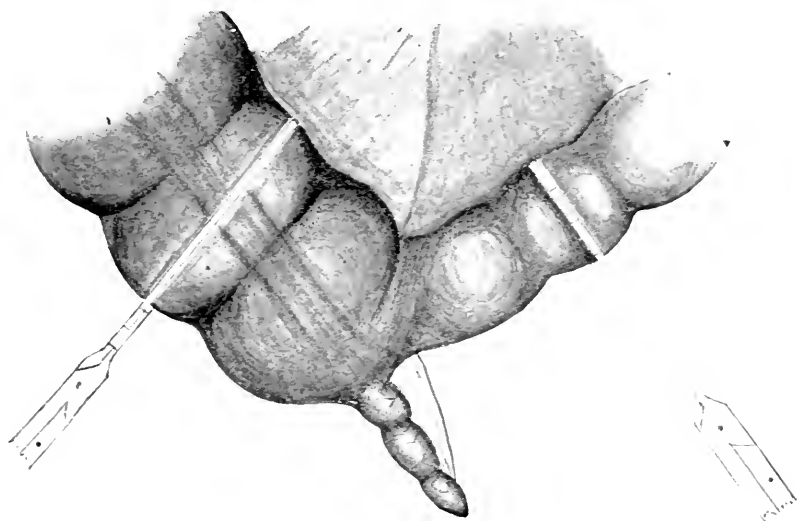


FIG. 12.

then clamped together and the sutures started on the small gut and sutured to the large gut, and so continue until the small

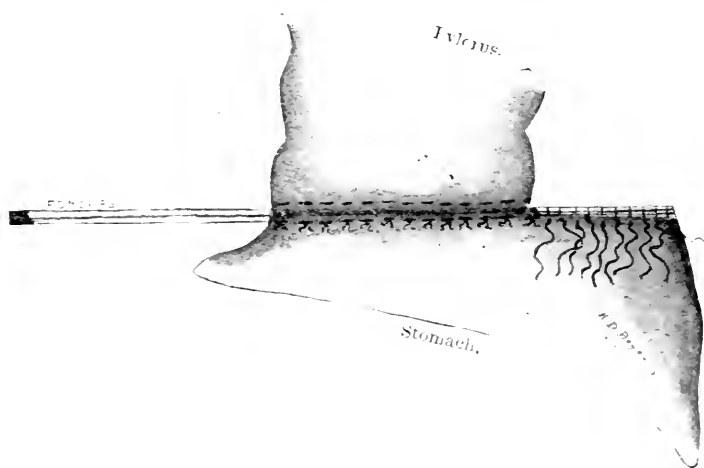


FIG. 13.

and the large gut have been sutured on each side, when the forceps holding the small gut is removed. Then a suture is placed first in the large and then in the small, and finally in

the large gut again; by this suture you make this part perfectly safe. Then the large gut is sutured upon itself, as in the method of invagination. When all the sutures are in place the forceps are passed above and below the line of suturing before withdrawing, to be sure that no suture has included both walls of the gut. The remaining opening is now closed and, if desired, another row of sutures introduced.

The above method can be used in resection of the pylorus in the same way (see Fig. 13).

In closing I wish to thank Dr. H. D. Beyea for his assistance in the illustrations and for helpful suggestions.

I also wish to acknowledge the debt of gratitude I owe Dr. Alfred Stengle for the kindness he showed me in extending the use of the Pepper Laboratory of the University of Pennsylvania, where every courtesy and facility was extended me for carrying on the experiments on the lower animals.

TRANSACTIONS OF THE AMERICAN GYNECOLOGICAL SOCIETY.¹

TWENTY-FIFTH ANNUAL MEETING, HELD AT WASHINGTON, D. C.,
MAY 1, 2, 3, 1900.

*The President, GEORGE J. ENGELMANN, M.D., of Boston, in
the Chair.*

DR. W. L. BURRAGE read a paper on

THE REMOTE RESULTS OF CONSERVATIVE OPERATIONS ON THE OVARIES AND TUBES: AN ANALYSIS OF EIGHTY-FIVE CASES.²

DR. EDWARDS.—I think we should be as conservative as possible. If one organ is more important, it is the tube rather than the ovary. I would always leave the tube, for Nature does a wonderful amount of repairing. I recall two cases of women, unmarried, past the age of 30, who married and conceived after I had operated, and in both cases the ovary had been buried down in the cul-de-sac. I take exception to the doctor's rule of letting such women go by, because I think they should have the benefit of the operation as much as if they were younger.

¹ Continued from p. 832, June JOURNAL

² This paper will appear in the JOURNAL for August.

DR. DUDLEY.—I am pleased to hear this paper, because it puts on record the minor points of conservative tubo-ovarian surgery. Last year I reported 123 cases of such operations and this year 138 without a death.

In a case of double pyosalpinx I took the tubes off, saving the left ovary, which was normal, brought the uterus up, split the fundus, cut out a wedge from the mucosa, and grafted in the ovary. I watched the case and am absolutely sure that the ovary grafted, and to-day the patient is menstruating every twenty-eight days. I reported the case in the Congress at Amsterdam, and so far have run across four other cases (five in all) in which I have implanted the ovary, not being able to save any of the tubes, and in all five I am sure the ovary has adhered, as I have had every portion of discharged structure analyzed. Two of the cases are menstruating. This procedure was followed to avoid the reflex effects of entire removal. I should make it a scientific work to save to the woman even the function of menstruation, as well as to avoid the reflex disturbances which follow total removal.

DR. NOBLE.—I would like to ask Dr. Dudley why he cut the ovary loose from the natural blood supply, if his only object was to retain the influence of the ovary, and if he put it in the uterus to see if pregnancy would result.

DR. DUDLEY.—It was to try the experiment of bringing about pregnancy that I planted the ovary. I may say that the woman upon whom I did the first operation was pregnant two months afterward.

DR. PHILANDER A. HARRIS.—I am glad to have heard Dr. Burrage speak as he has. I believe that in these cases there is often no disease in the ovary itself. For two years I have scarcely removed an ovary; the only cases have been those clearly of ovarian abscess. I know that pregnancies have occurred subsequently. The personal inferiority a woman feels when menstruation has ceased is a matter we must not forget. It is not the mere matter of not having children, but there is a personal element to be considered.

I am interested to know how many cases of pregnancy, if any, the doctor has had in women from whom he has amputated both tubes close to the uterus; and I take it for granted also that the doctor, in making what we might call tubal exsections, would not recommend the taking of a V-shaped piece from the uterus along with the tube.

DR. H. N. VINEBERG.—I have been particularly interested in this subject for a number of years, and must congratulate the writer of the paper for the excellent clinical report. I am pleased to see that he does not claim 100 per cent of anatomical cures or 100 per cent of clinical cures. Speaking in a general way, the class of cases which in my hands have given the poorest results have been those in which the lesions have not been so very severe.

DR. MANN.—I have done a great many conservative operations. One case in point was that of a lady operated on, from

whom one tube and ovary were entirely removed and the other tube and ovary were in bad condition. The tube was opened, and, after breaking up the adhesions, the ovary and tube were left. The woman married and has had four children, three girls and a boy, which settles the question of sex in regard to one ovary.

DR. J. RIDDLE GOFFE.—There is no subject before us at this time of greater importance than that of conservative work upon the appendages. I am now approaching my one hundredth case. My work has been very largely through the vaginal rather than the abdominal incision. I very much prefer that route of attack. I wish to say that one detail in which I differ from the writer of the paper is in the use of the cautery. Where I have large, bulging ovaries I use the cautery to resect, and where there is a cystic condition I use the cautery to burn out the cyst. Just before I left the city I had the satisfaction of having a patient call at my office upon whom I did such work a year ago last March. She expects to be confined in September. I removed two-thirds of the right ovary and applied the cautery oftentimes to the left ovary. I have had the patient under observation for some time, finding that the ovaries retracted and became normal in size and retained their natural position in the pelvis, and the fortunate result is that she is pregnant.

DR. BURRAGE (closes).—I have operated twice on cases in which there was no symptomatic and anatomical cure, though I think there were several other cases where operation was required where the patients would not be operated upon. I have used the cautery, as Dr. Goffe spoke of, on many cystic ovaries. In reply to Dr. Harris, I have seen no case of pregnancy follow amputation of both tubes. When both tubes were closed I found no case of subsequent pregnancy. I have had in my experience pronounced neurasthenics above the age of 35 years, and it seems to me that complete total removal or no operation is indicated. They do not do well after resections. It seems to me that what we want is careful bacteriological work in this line, so we may determine upon which cases to operate from the gross appearance. Few of us would wish to do an operation where tuberculosis was pronounced.

INTERNAL SECRETION OF THE OVARY.

DR. A. W. JOHNSTONE, of Cincinnati.—Retained secretions are the cause of nearly all nervous conditions. There is no proof that the ovary has any other function than the manufacture of eggs. For fifty years we have known that the ovary is active during intrauterine life and that it begins to ripen Graafian follicles at the sixth month of gestation; that these ripen rather rapidly until after birth; that during infancy the Graafian follicles still ripen occasionally, but not so rapidly as before birth, and persist in the same ratio up to puberty. At puberty the follicles ripen more rapidly, but at no time do they amount to as many as the number of men-

struations in a year. During and after the menopause the Graafian follicles still continue to ripen.

Of all the ovaries past the menopause that I have removed I have never found one that did not possess a small number of Graafian follicles in an immature state, and I have frequently found those that have recently ruptured. The ovary is in no sense a gland. Its epithelium is arranged for the purpose of being cast out and lost, and it is not so placed that its secretion, if it has any, could be absorbed either by ducts or blood vessels.

The adherents to the internal-secretion theory claim that it is like the suprarenal, the thymus or thyroid gland. This I can state positively is not correct. The thymus gland is nothing but the larger lymphatic gland. It does the work of the lymphatic structures during intrauterine life. Its lymph vessels are just the same as those of the axilla or groin. The thymus gland and suprarenal capsule have no lymphatics that amount to much, but a very rich supply of blood vessels, and each epithelial cell is closely approximated to a venous radical, thus providing for a rapid absorption of whatever secretion its cells may make. So far as we know, these cells are never entirely removed except by a low form of colloid degeneration, which material is readily absorbed by the blood vessels close to it. But the ovary has a true duct, through which its epithelium when cast out passes off *en masse* to the outer world.

If it is a lack of an internal secretion that causes the nervous menstruation disturbances of the menopause, why is it that the little girl does not have them; why is it that delayed menstruation in a child-bearing woman will produce identically the same symptoms as those of the menopause? This is apparent in all of our every-day work, and has occurred under my own observation so often that I may lay it down as a rule that if a woman's menstruation is, for any reason except pregnancy, delayed, she is apt to have symptoms closely approximating those of the change of life. This leads me to believe that the internal secretion of the ovary is a myth.

DR. HIRAM N. VINEBERG, of New York, read a paper on

THE TECHNIQUE, INDICATIONS, AND ULTIMATE RESULTS OF
SUTURING THE ROUND LIGAMENTS TO THE VAGINAL
WALL FOR RETROVERSIONS AND FLEXIONS
OF THE UTERUS.¹

DR. CURRIER.—I think the fixation of the uterus by merely suturing the round ligament does not give much to hold it forward, and I think it can probably be done better through the abdomen. My own idea is to limit this operation to those cases in which another operation is necessary. As an operation of election, where no other operation is required on the uterus or perineum, I very much prefer opening the abdomen, rectifying

¹ This article will appear in the August JOURNAL.

any difficulty, and then, if desired, confine the operation to the round ligaments, which can be doubled on themselves and turned two or three different ways.

DR. SUTTON.—I have seen Dr. Vineberg carry out the procedure described, and have myself done the operation with uniformly good results. I hope the time will soon come when the various pelvic diseases will be attacked through the vagina. I am the more persuaded that this method will be universally used since the French and American operators are taking large fibroids out by the vagina after reducing by morcellement.

DR. J. WESLEY BOVÉE.—I think in following these operations there is danger of losing sight of the fact that most of the cases of dislocation of the uterus are due either to injuries to pelvic fascia or, in the nullipara, to abnormal attachment of the ligaments to the uterus. The necessity in point, I think, is to adjust the ligaments. Constipation, and over-distension of the bladder, lessen the efficacy of the shortening of the round ligaments.

DR. J. RIDDLE GOFFE.—I do not think it will be long until Dr. Sutton's hope that all pelvic work may be done through the vagina is realized. I believe that no man is justified in doing laparotomy until after he has endeavored to relieve the patient by a vaginal incision. In only one case within the last few years have I been obliged to resort to laparotomy to complete the work. I have removed seven fibroid tumors by myomectomy through the vagina. These cases had retroverted, which condition was relieved by shortening the round ligaments after doing myomectomy.

DR. VINEBERG (in closing).—I have tried to limit the operation to certain cases, and still think that the cases may require to be selected for the vaginal route. Some cases are best approached from the abdomen. I have frequently removed small fibroids through the vaginal incision.

A paper by DR. G. RICHELOT, of Paris, entitled

A COMPARISON OF VAGINAL AND ABDOMINAL OPERATIONS,
was read by title.

DEMONSTRATIONS OF CASTS ILLUSTRATING THE ANATOMY
OF PREGNANCY AND LABOR; ALSO, MODELS
USED IN GYNECOLOGIC TEACHING.

DR. J. CLARENCE WEBSTER, of Chicago.—I offer for inspection these casts, which have much value in teaching. I believe that no work of this character has been done in America except that by Dr. Edgar, of New York, two years ago. The series includes casts illustrating a vertical median section of the pelvis in a woman who died of pernicious vomiting; another showing the beginning of the fifth month of pregnancy, and one of the beginning of the eighth month of pregnancy. There is a cast of the amniotic cavity at the beginning of the

eighth month of pregnancy, and one showing labor in the advanced second stage; also, one with the fetus *in situ*.

DR. MANN.—I would like to inquire whether these models presented by Dr. Webster have been put upon the market; whether it would be possible for teachers of gynecology to secure them. I would suggest that some arrangement be made whereby they could be secured for this purpose.

DR. BUCKMASTER.—A method which I have found useful in securing these reproductions is in the employment of paraffin. The only disadvantage is that but one cast can be produced at a time.

A paper entitled

COMBINED NEPHRECTOMY AND URETERECTOMY,¹

by DR. E. E. MONTGOMERY, of Philadelphia, was read by title.

ANASTOMOSIS OF THE URETERS WITH THE INTESTINE: AN HISTORICAL AND EXPERIMENTAL RESEARCH.

DR. REUBEN PETERSON, of Chicago.—The experimental work forming the basis of this article was undertaken with the view of studying the changes resulting from anastomosing the ureter with the intestinal tract, and of determining whether the procedure could with safety be employed in human beings. The important and far-reaching changes in the kidneys and ureters resulting from a bacterial invasion from the septic cavity into which the ureteral orifices were implanted had not been satisfactorily studied. The question will always arise whether infection of the kidney will invariably follow its ureteral union with the intestine. If this be true, can perfection of operative technique reduce this infection to a minimum, so that the kidney can recover and remain a useful organ? These questions must be answered before the surgeon will subject his patient to an operation from which, once performed, there is no retreat.

The first portion of the article has been devoted to an exhaustive review of the literature of the subject. The second part has been given over to the description of the author's own experiments, from which, together with the work of others, general conclusions have been drawn.

Perhaps the most striking fact revealed by a study of the experimental work which has been done on uretero-intestinal anastomosis is the exceptionally high mortality accompanying the operation, whether one or both ureters are implanted in the bowels. Out of 60 dogs operated on by various experimenters where one ureter was implanted into the intestine there were 35 recoveries, or 61 per cent mortality, while out of 65 dogs undergoing bilateral ureteral anastomosis only 8 survived, or a mortality of 87 per cent.

The causes of death were various, but in a general way it

¹ See this JOURNAL for June, p. 751.

may be stated that the majority resulted from peritonitis through a giving way of the uretero-rectal stitches and the subsequent escape of urine into the peritoneal cavity, or to an overwhelming infection of the kidney, ascribed to nephritis or uremia.

A careful review of the different operative procedures shows that the primary mortality was large by all methods. The method which called for the least amount of suturing of the ureter itself was found to give the best results. The post-mortem on the animals surviving the operation for any length of time in nearly all instances showed unmistakable evidence of stenosis of the ureteral orifice, hydroureter, hydronephrosis, and pyelonephritis. In no case was it demonstrated beyond dispute that the kidney was normal after the corresponding ureter has been implanted into the rectum.

The author then gives a short abstract of 28 uretero-intestinal implantations in man. A critical survey of these 28 operations shows the primary mortality, 32 per cent, to be exceedingly high. If to this be added the uncertainty as to subsequent renal infection in the cases surviving the operation, it must be admitted that uretero-intestinal anastomosis is not an operation of choice.

The subsequent history of the successful cases places the operation in a still more unfavorable light. Of the 19 recovering, 2 died later of pyelonephritis and 2 of uremia after implantation of the second ureter. The postmortem in one of these revealed a fibrous condition of the kidney, whose ureter had been implanted fourteen months before. No autopsy was secured in the second case, but from the similarity of symptoms it is fair to assume that the pathologic conditions were the same as in the first case.

Of the 4 surviving cases with implantation of one ureter, 1 is living and well at the end of eight years, but it is not stated that the discharges from the rectum contain urine. Renal infection was responsible for death in each of the 9 fatal cases.

In 1894 Maydl reported 2 cases of exstrophy of the bladder operated on by an original method consisting of the implantation of the vesical trigonum with its ureteral orifices into the sigmoid flexure. The predominant idea of this operation was the preservation intact of the ureteral orifices and their utilization as a means of preventing an ascending renal infection.

In order to ascertain whether this theory is borne out by clinical facts, the author collected and tabulated 36 cases of operations performed according to this technique. Of the 36 cases, 5 died from the operation and 2 cases four and fifteen months later of pyelitis. This operative mortality is surprisingly low for such a difficult major operation. Thirty-three of the operations were for exstrophy of the bladder, there being 26 males and 5 females.

The sphincteric control over the urine is reported as remarkably good, it being noted as poor in only one case. There

were 6 fistulæ following the operations, all noted as subsequently closing. The primary and secondary results of uretero-trigono-intestinal anastomosis are so much superior to those of ureteral implantation without the preservation of the vesical ureteral orifices as to always demand the performance of the first operation in preference to the latter.

A summary of 9 cases of uretero-intestinal anastomosis through the formation of rectal fistulæ shows that 6 of these were for exstrophy of the bladder, with a mortality of 67 per cent. Two vesico-vaginal fistulæ were both cured, and there were 2 cases of vesico-vagino rectal fistulæ.

Frank's experiments have shown that in dogs vesico-rectal anastomosis is a comparatively safe procedure, that the bladder remains free of feces, and that infection of the kidneys does not result in some of the cases operated upon.

The author's experimental work, covering a period of eighteen months, is now given in detail. The bacteriologic and microscopic work was conducted by Dr. F. Robert Zeit, of the Post-Graduate Medical School. Dogs were used for all experiments, and the most aseptic technique was employed.

Three series of experiments were conducted:

Series I. *Bilateral Uretero-intestinal Anastomosis*.—Both ureters were implanted simultaneously in the rectum in 28 dogs, with 5 recoveries and 23 deaths. Various forms of operation were employed, the most common being an incision made in the bowel wall through the serous and muscular coats, the ureters being implanted in the rectum through small incisions made in the mucosa; they were held in place by sutures passing through the mucosa and either their outer coats or peritoneal covering. The closure of the incision by Lembert's sutures completed the operation.

In most of the cases death ensued from general peritonitis accompanied by extravasation of urine into the peritoneal cavity. This escape of urine in most instances arose from the slough at the site of the anastomosis. The ureters were, as a rule, dilated, although the ureteral orifices were patent. In the 5 dogs recovering, the operative results may be termed fairly good. In only 1 case was a single ureter found not to be patent. In 4 of the cases, however, the ureters are noted as being dilated. In 1 there was pyoureter, in another hydro-ureter. Three of the cases died of pyemia, secondary infection, and endocarditis, forty, eighty-four, and thirty-nine days respectively after operation. In one dog living thirteen months after the operation there had been a recovery from the infection with resulting contracted kidneys.

Series II. *Lateral Uretero-intestinal Anastomosis*.—Sixteen dogs operated upon, with 3 recoveries; 12 died of general peritonitis due to leakage through stitch holes. The object of these operations was to unite the ureter to the bowel by a lateral anastomosis, so that dilatation of the ureter and ascending infection could be avoided. In 2 of the dogs recovering, through faulty technique the intestinal mucous membrane

closed and stenosis resulted. In the other dog pyelonephritis resulted in a short time, although there was no obstruction to the flow of urine.

Series III. *Uretero-trigono-intestinal Anastomosis*.—Twenty-one dogs operated upon; 12 died of peritonitis through the sloughing of flap; 4 died of peritonitis from other causes. The first 12 cases died from ligating the vesical arteries supplying the flaps. In 9 experiments where these arteries were preserved there were 5 recoveries from the operation.

The author's modification of Maydl's technique is then described in detail. In brief, it is the uniting by means of a continuous suture of a rectangular bladder flap containing the ureteral orifices to the bowel after the latter has been opened. A review of the 5 experiments where the dogs recovered shows that in 1 the ureter was occluded with the formation of an atrophic kidney. Of the 4 remaining cases 1 had a non-infected kidney where the trigonum was implanted, pyelonephritis on the other side where uretero-rectal anastomosis had been made. One died in forty-four days from active pyelonephritis where the mucosa of the ureteral orifice had been accidentally removed. One lived two months without signs of infection of the kidneys; one had pyelonephritis after eight days where the mucosa was removed from the natural orifice, and no sign of kidney infection in the other kidney, whose orifice was implanted intact.

The general conclusions are as follows:

1. The primary mortality of uretero-intestinal anastomosis, both in experimental work on animals and in man, is exceedingly high.

2. The best technique is that requiring the least amount of suturing of the ureters themselves.

3. All efforts to prevent ascending renal infection in animals or in man where the ureter has been implanted without its vesical orifice have proved futile.

4. It is impossible to determine in advance the extent of the infection which will result from uretero-intestinal anastomosis. The patient may die in a few days of a pyemia or in a short time of pyelonephritis, or, in rare cases, may recover from the infection with resulting contracted kidneys.

5. Hence the operation is unjustifiable, either for the purpose of making the patient more comfortable, as in exstrophy of the bladder, vesico-vaginal or uretero-vaginal fistula, or for malignant disease of the bladder.

6. The results of uretero-intestinal anastomosis through the formation of vesico-rectal fistulae have not been favorable up to the present time.

7. The success of Frank's experimental work in vesico-rectal anastomosis justifies the expectation that the future results of this operation will be more satisfactory.

8. The primary mortality of uretero-trigono-intestinal anastomosis is low for an operation of this magnitude.

9. While it cannot be denied that ascending renal infection

may occur after this operation, the infection, as a rule, is of such a type that the chances of the individual's overcoming it are good.

10. Hence the operation of implanting the vesical flap with its ureteral orifices into the intestine is a justifiable surgical procedure.

11. There is no valve guarding the vesico-ureteral orifice, nor does the circular muscle layer of the ureter, or the bladder muscles themselves, act as a sphincter.

12. It has been abundantly demonstrated by experimental and clinical work that the rectum tolerates the presence of urine and acts as a good substitute for the bladder, and that good control over the anal sphincter is maintained.

DR. FORD, of Utica.—I would like to refer to a case illustrating the toleration of the bowel for continuous service as a bladder. The case was that of a young girl with total suppression of the urine lasting over a week. There was no history of stone, and after six weeks she recovered without nephritis. She passes all the urine through the bowel and is in comparatively good health.

A paper by GEORGE M. EDEBOHLS, of New York, on

MIGRATED OVARIAN TUMORS,

was read by title, as was also a paper by DR. J. WESLEY BOVÉE, of Washington, D. C., entitled

A CRITICAL SURVEY OF URETERAL IMPLANTATION.

DR. H. A. KELLY, of Baltimore, read a paper on

THE EVOLUTION OF MY TECHNIQUE IN THE TREATMENT OF FIBROID UTERINE TUMORS.

THE PRESIDENT then delivered the

ANNUAL ADDRESS.¹

DR. F. H. DAVENPORT, of Boston, presented a paper on

INTRA-ABDOMINAL AMPUTATION OF THE UTERUS: A MODIFICATION OF HYSTERECTOMY.

The indications for hysterectomy are pretty well established, and interest now centres upon the technique. Attention is called to a modification of so-called abdominal hysterectomy practised by the author for about two years.

When it is possible in a young married woman to leave the cervix I prefer to do so. For suitable cases I choose the abdominal route. I operate by the vagina for cancer either of the cervix or body. If a patient who is single or near or past the menopause, with a small, medium-sized fibroid which is

¹ Will appear in the August JOURNAL.

non-adherent, objects to the scar of the abdominal operation, I operate by the vagina. On the other hand, in a young married woman I choose the abdominal route; it is of a good deal of importance that the vagina be preserved. When the uterus is to be removed for chronic inflammation or its results, there is usually concomitant disease of the appendages, and the abdominal route gives full opportunity for seeing the exact condition of all the pelvic organs. The essential feature in which my method differs from that usually employed is that the uterine arteries are not ligated. The method is given in minute detail. The results have been satisfactory.

DR. A. LAPHORN SMITH, B.A., M.D. presented

SOME OBSERVATIONS ON PRYOR'S METHOD OF REMOVING THE
FIBROID UTERUS.¹

The papers of DRs. KELLY, DAVENPORT, and SMITH were discussed jointly.

DR. WILLIAM R. PRYOR.—The essence of the operation is the reduction of the mass by morcellement to produce a symmetrical tumor. The ovarian arteries being tied, the anterior wall of the uterus is split through. Traction forceps are applied, the intraligamentary nodule seized and taken out of its bed. The moment the nodule is taken out, the side from which it is taken becomes symmetrical. If the nodule is in front it can best be approached by tilting the tumor forward.

DR. GORDON.—The continuous suture of which Dr. Davenport spoke is the one I have followed since I have been doing hysterectomy. I object to the chromicized gut as used by Dr. Smith, because its absorption requires a long time and it sometimes never occurs. I further object to Dr. Davenport's continuous suture with silk. I have used nothing but catgut since 1884, except in the through-and-through sutures of silk-worm gut in abdominal section.

DR. MANN.—The trend of sentiment seems so decidedly in favor of the method pursued by Drs. Pryor and Kelly that I hesitate to mention a different method which to me makes the operation easier. In a case in which the tumor is held down in the pelvis by the broad ligaments, I think that if the upper part of the broad ligament were cut first and then the tissues across, the tumor would come out of the pelvis and would be more easily gotten out.

DR. J. M. BALDY.—In a case within the past week I encountered a fibroid tumor in which the nodule extended down over the vagina. I was obliged to approach it posteriorly, instead of anteriorly as Dr. Kelly mentioned. Enucleation was done similarly to the method claimed by Doyen.

As to cutting down one side, amputating, and coming up on the other, I did that operation shortly after it was demon-

¹ See the JOURNAL for June, p. 765.

strated by Dr. Pryor, and I consider it exceedingly dangerous and only to be employed by the most expert.

DR. REYNOLDS.—I consider that the principal point in the method of Dr. Davenport is the manner of tying the uterine artery. The operation is in this way made much simpler.

DR. JOHNSTONE.—I think the most of Dr. Kelly's troubles are of his own making. Where the uterus is wedged down in the pelvis and there is danger of hemorrhage the arteries should be first tied, thereby cutting off the blood supply as effectually as a plumber turns water off from the yard.

DR. KELLY (closing).—I would like to call attention to the fact that the bisection method is applicable to all inflammatory cases. There is no risk to the ureters on the side if you push down the bladder and the tissues. I consider it safe to cut the uterine arteries and clamp afterward.

DR. A. LAPHORN SMITH (closing).—The first point is the great advantage which I have found in this operation of going down on one side and coming up on the other, beginning on the easy side, on which side we are not in danger of injuring the ureters; the tumor is so pulled away that it is almost impossible to injure them. Dr. Pryor's method has that advantage on the difficult side.

I consider it very important to leave the cervix. I am told that Doyen's mortality is high, and this, I believe, is because he takes out the cervix. I think we thereby increase the risk of the infection from the hemorrhage and length of the operation. I have reported ten cases of large fibroids removed in this way, all of which recovered. I use chromicized catgut which has been in potassium solution for one hour; in the cervix it lasts but ten days. I would never leave any kind of silk in the abdomen. I agree with Dr. Gordon that there is nothing like silkworm gut for closing the abdomen, and with it I have not had a hernia for four years. I do not tie too tightly, and I have a dry wound. There is no need of opening or draining the cervix. Contrary to Dr. Baldy's opinion, I think this operation was made for operators of average ability like myself.

BRONCHIAL DISEASE NOT INVARIABLY A CONTRAINDICATION FOR ETHER ANESTHESIA IN ABDOMINAL SURGERY.

DR. THADDEUS A. REAMY, of Cincinnati.—My personal experience in surgical anesthesia covers 8,000 cases; obstetrical work, 3,000 deliveries—2,000 of these under chloroform anesthesia. For surgical work I consider ether in every way preferable as an anesthetic. The prejudice against the use of ether in the presence of acute, subacute, or even chronic bronchitis I consider largely unfounded, provided proper conditions are observed in its administration. These conditions include proper preparation of the patient, that the anesthetic be administered in the operating room, the temperature of which must be from 98° to 100° F. The chest and trunk of the patient should be lower than the pelvis and lower than the

extremities. The ether should be of pure quality, such as Squibb's anesthetic ether. The inhaler must be so constructed as to permit reinhalation of the vapor, and, therefore, mixed from the beginning to the end of the session with carbon dioxide. I object to most of the inhalers in use, and present a simple one of special form constructed by my nurses, which answers the purpose perfectly. The ether is poured on absorbent cotton in the bottom of the inhaler.

No additional ether is used unless the operation lasts more than forty minutes. I commence the administration of the anesthesia myself. I regard the assuring word of the surgeon as very important. Great care in the protection of the patient on removal from the operating room should be observed. For several hours after the operation the temperature of the patient's own room should not be below 80°.

I have never witnessed but one case in which pneumonia was probably produced by ether inhalation. I have seen bronchitis, both acute and chronic, at once cured as the result of ether anesthesia. In some cases I do not hesitate to administer ether to patients suffering with severe bronchorrhea. I would not employ ether in the presence of emphysema. I would not, of course, employ ether when the patient is suffering from Bright's disease, but I have rarely seen damage to the kidney follow its administration in properly selected subjects. It is my custom in subjects for abdominal or vaginal section to administer four or five grains of calomel four hours before the operation, and I order that they have hypodermatically one-sixth of a grain of morphine and one-one-hundred-and-twentieth of a grain of atropia twenty minutes before the section. The calomel I have found a good foundation for securing purgation by salines within twenty-four hours after the operation. I direct that my patients drink freely of water, and believe that all these questions tell in the protection of the kidneys and of the respiratory organs against damage from anesthesia.

DR. MALCOLM MCLEAN.—This subject deserves careful consideration. There are two points in the method of giving ether; one is the elevation of the temperature of the room. This is very much overlooked, and trouble after anesthesia is often attributable to the low temperature of the room. The operator feels comfortable in a temperature of 72°, but the patient under anesthesia is not in a safe condition. I therefore emphasize the point which Dr. Reamy made of the high temperature of the room. The second point is unnecessary confusion in the etherizing room. It is a common custom for anesthetizers to keep up a running conversation with the patient or nurses or with others, making considerable confusion while ether is being given. The result is that the patient takes a great deal more ether to get under the anesthetic. If the patient is in a secluded place, as she should be, and no unnecessary intrusion is permitted, I am sure that one-third of the ether will place her under full anesthesia. This has been my

experience for over twenty years. My rule is never to let a person speak to the patient after the anesthesia is commenced.

DR. PHILANDER A. HARRIS.—I have had ether administered to me quite a number of times, and from personal experience I can corroborate the wisdom of remembering that in the place where we administer ether to a patient it is the all-important point that conversation, laughing, reference to anything else except just the business of the ether, should be entirely dispensed with. This is important, not only for the patient's feelings, but also with reference to the ease and advantage with which we can anesthetize without these disturbing elements. To give an anesthetic in a proper manner it must be easily possible for the patient to concentrate her mind upon the item which is most important to her and most important to us.

DR. REAMY (closing).—The conversation in the room is one of the most damaging things that can occur. As a rule I do not have the reflex cough to bother me, for the patients are put under the anesthetic within four to six minutes in almost every case. No one is allowed to say a word until the patient is unconscious. As Dr. McLean said, the room must be hot, and the ether must be given in the operating room, that the temperature may be even from beginning to end. The inhaler is not removed unless the patient develops cyanosis. All of this is done in the interest of not producing damage to the mucous membrane. I use always, in every case, pure ether.

The paper of DR. EDWIN B. CRAGIN, of New York,

THE TREATMENT OF FULL-TERM ECTOPIC GESTATION:
SHOULD NOT THE CHILD RECEIVE MORE
CONSIDERATION?¹

was read by title.

THE RELATION BETWEEN DYSMENORRHEA AND APPENDICITIS.

DR. ARCHIBALD McLAREN, of St. Paul.—The paper considers the influence of pelvic and inflammatory conditions on menstruation. In cases of cystic ovaritis and ovarian abscess I have seen some particularly satisfactory results following the removal of overlooked appendices. In 200 laparatomies I have 158 cases where inflammatory appendages had to be removed, and in 40 per cent of these the appendix was diseased. The conclusion drawn is that the trouble had originated in the appendix and spread to the ovary and tube. During the same time I have operated on 17 cases of appendicitis in which there was no evidence of extension of the inflammation. I do not in every case advocate the removal of the appendix. The technique of my early operations is detailed. Later I have adopted the method of Kelly.

DR. A. J. C. SKENE.—The relation of appendicitis to dysmenorrhea is a new idea to me, and consequently I accept what has been said by the author of the paper as being per-

¹ See p. 740 of the JOURNAL for June.

fectly reliable science, about which I have nothing whatever to say except that the paper explains certain observations which I have been unable to account for, of ovarian pain undoubtedly caused by appendicitis, the pain in the ovaries being aggravated always at the menstrual period and giving rise to that condition known as ovarian dysmenorrhea. In those cases the ovarian pain has disappeared when the appendix has been removed.

I would say that the extirpation of the appendix is best and most quickly accomplished by using the hemostatic forceps, which has the advantage over other forceps in that it can absolutely and permanently close the canal of the appendix and the opening into the intestine by pressure, and so change the structure of the mucous membrane that it will unite and remain united. The stump undergoes no change by absorption and there is no danger of hemorrhage or infection. There is no ligature to be disposed of, and the relief is permanent and absolute.

DR. A. LAPHORN SMITH.—My experience coincides with that of Dr. McLaren. In nine or ten cases where I have operated for tubal pregnancy or pus tubes I have found the appendix firmly embedded in the tumor. In one case of tubal pregnancy the specimen could be held up by the appendix. The salpingitis caught from the appendicitis was probably the cause of the tubal pregnancy. In another case the appendix could be followed by a probe about an inch deep in a mass of exudation. I am often called in consultation by two doctors who disagree, one being of the opinion that the condition is salpingitis and the other appendicitis, and since I have had more experience I agree with both. This explains why it is so difficult to come to a decision before operation. I think this question has an important bearing upon the question of pus tubes in young women. If the plan of tying the ligature around the appendix and cutting off were abandoned we would have no fecal fistula. If treated as a bullet wound it would be the simplest procedure. Constipation sets up bacilli infection in proportion to the number of days the bowels are unmoved.

DR. McLAREN (closing).—The point mentioned by Dr. Laphorn Smith, of young women having pus tubes, I think is very important. I have seen several young women whose reputation had been smirched by the very fact that they had pus tubes, when operation demonstrated that there was no question at all. They had had appendicitis, and that was the cause of the suppuration of the tubes. We usually find such cases confined to the right side; the ovary and tube on the left side are not affected. When one finds a right-side salpingitis or evidence of inflammation of the appendix on the right side, he should always be suspicious of the appendix. Out of 59 cases I removed the appendix 20 times. It did not make the slightest difference in the mortality. I object to the method of taking off the appendix with the cautery. I think, as Dr.

Smith says, treating it as a bullet wound is safer and more surgical.

DR. EGBERT H. GRANDIN's paper entitled

COMMENTS ON THE TOXEMIA OF PREGNANCY AND ON THE
OPERATIVE TREATMENT OF UTERINE DISPLACEMENTS¹

was read by title.

DR. PHILANDER A. HARRIS, of Paterson, N. J., demonstrated the utility of a

CERTAIN CHART FOR THE DETERMINATION OF PELVIC
ASYMMETRY FROM A VERY SIMPLE METHOD
OF EXTERNAL PELVIMETRY.

He exhibited the instrument and urged a more frequent use of the pelvimeter.

DR. HARRIS also exhibited photographs illustrating the

ADVANTAGES OF EMPLOYING A CERTAIN BACKGROUND IN
THE PHOTOGRAPHY OF PATHOLOGIC SPECIMENS.

DR. E. VAN DE WARKER.—In regard to the photographs which the doctor has shown us, I would like to say that in my experiments I have found a good way to get rid of the shadows is to suspend the specimen in water in the glass tray with the illuminator plate under it, and in this way you get the finer details and charming effects. It is impossible to illuminate otherwise without a shadow. I used an inch rule in making the meshes, and photographed the rule with the specimen on one side. The prints, to have the best effect, ought to be made on the old silver printing paper. The picture ought to be reduced from the full size, because it gives better intensity and better contrast in the minute details of the specimen.

DR. J. RIDDLE GOFFE.—The method of using a wire screen was suggested by Pryor some years ago. The pharmacist at the Polyclinic has taken pictures thus for me and is using it very constantly with all the pathological specimens.

A CONTRIBUTION TO THE MANAGEMENT OF FACE
PRESENTATIONS, WITH REPORT OF TWO CASES.

DR. MALCOLM McLEAN, of New York.—The patient being under full chloroform anesthesia, the hand is passed carefully within the vulva, with the outside hand seizing the body of the child. In the absence of uterine contraction the chin is pushed as much away from the pelvic brim as possible from the point toward which the chin is pointing in the direction of the occiput—that is, pushing obliquely from behind forward. At the same time the fingers of the vaginal hand are pushed up alongside of the head in one or other of the oblique diameters of the

¹ See p. 721 of the JOURNAL for June.

pelvis so that they can reach the suboccipital portion of the head. The thumb at the moment steadies the brow, and with a slight elevated motion imparted to the whole head it is caused to rotate on its axis as described, the chin passing upward above the ischiatic notch as the occiput is drawn down from the pubes. Flexion may be considerably hastened by pressing down the occiput by the outside hand as soon as the face is dislodged from its wrong position. Detailed cases illustrating the usefulness of the method are given.

DR. GREEN.—I have always believed that it was hardly possible to flex the fully extended head in the pelvis in the way described. No one man sees many of these face presentations, and I have never happened myself to have seen a face presentation with the chin posterior where I have not succeeded in delivering with forceps or allowing the mother to deliver. Everything depends upon the relations between the head and the pelvis. If the pelvis is sufficiently large or the disproportion not extreme and the operator is fortunate in having a small hand, flexion may be accomplished. To successfully turn an occipito-posterior presentation to anterior we must also turn the body of the child at the same time; otherwise the head will not remain anterior, and in applying forceps, which may be necessary, the head will slip back into its first position. I am glad to hear that flexion has succeeded in Dr. McLean's hands. I think that many face presentations are due to slight antero-posterior contractions at the brim, and it is a question, unless the child is very large, whether it is not wise to let it enter the pelvis and come down in such presentation.

DR. MURRAY.—I have listened with much pleasure and interest to this paper on account of the infrequency of the cases, and on that account we should be prepared to meet them. I believe the dictum is that when we have irregular presentation of the child there is something faulty in the pelvis. The examination should be thorough before we attempt any remedial operation. The mere introduction of the hand to determine the cause gives means to determine the size of the pelvis and the relative size of the head to the pelvis, and this will be a guide to remedy faulty presentations. Schaat's method is very good, but has to be employed at the superior strait. When the child does not enter the superior strait there must be an impediment, and we should determine whether the impediment would not prevent even the remedial operation being successful. The method which the writer has described I have used in one case. Before that I have used the head to make cephalic version. Where the operation is difficult on account of the head being wedged, and where it is difficult to get the patient under an anesthetic, we can obtain great aid either by putting the patient in the knee-chest position or having the patient almost lie in Sims' position to take away the head from the superior strait.

DR. REYNOLDS.—I should be quite ready to believe that such a manœuvre were possible without having heard Dr.

McLean's paper. The very fact that I have seen Nature convert the vertex into the chin when the head was low leads me to believe that surely in a proportion of cases we can reverse the principles so far as operation at the brim goes. In the treatment of the face posteriorly in the pelvis is the suggestion which I have borne in mind for some years, that if the ordinary manipulative corrections of the presentation failed I should expect to render them easy by symphyseotomy.

DR. MCLEAN (closing).—The one point which I wished to emphasize in these cases was that the head had the ordinary relation to the size of the pelvis. I speak of this because two or three prominent teachers have approached me since my first report and stated that there must have been great disproportion between the size of the head and the size of the pelvis. This I want distinctly to offset by the statement in my paper. The proportions were normal or below the normal relations as regards the width of the conjugate in the mother. In other words, there were the average conditions. I simply took advantage of the flexible portions of the pelvic passage.

A paper by DR. E. P. DAVIS, of Philadelphia, on

SYNCYTIOMA MALIGNUM AND ECTOPIC PREGNANCY CAUSING
PERNICIOUS NAUSEA,¹

was read by title.

At the close of the scientific business of the Society the retiring President, DR. GEORGE J. ENGELMANN, thanked the members for the courteous helpfulness which had made the duties of the President pleasant and easy.

The newly-elected President, DR. E. VAN DE WARKER, of Syracuse, was then introduced.

DR. CHARLES JEWETT and DR. R. B. MAURY were the Vice-Presidents elected for 1900; DR. J. RIDDLE GOFFE was re-elected Secretary, and DR. J. MONTGOMERY BALDY Treasurer. Other members of the Council were M. D. MANN, W. R. PRYOR, S. C. GORDON, and J. T. JOHNSON.

The place selected for the meeting in 1901 was Chicago.

The afternoon of the closing day of the meeting was devoted to anniversary exercises at Marshall Hall, on the Potomac.

DR. T. ADDIS EMMET, of New York, read a paper entitled

PERSONAL REMINISCENCES ASSOCIATED WITH THE PROGRESS
OF GYNECOLOGY.

THE STATUS OF GYNECOLOGY IN 1876 AND IN 1900

was the subject of a paper by DR. ALEXANDER J. C. SKENE, of Brooklyn, New York.

¹ See original article, p. 1.

DR. JAMES R. CHADWICK gave some

REMINISCENCES OF THE FOUNDATION AND EARLY
YEARS OF THE SOCIETY.

The programme was completed during the return of the boat to Washington by papers by DR. E. VAN DE WARKER, of Syracuse, on

THE PERSONAL FACTOR IN THE WORK OF THE AMERICAN
GYNECOLOGICAL SOCIETY,

and by DR. THADDEUS A. REAMY, of Cincinnati, on

SOME KALEIDOSCOPE PICTURES IN RHYME.

TRANSACTIONS OF THE NEW YORK OBSTETRICAL SOCIETY.

Stated Meeting, April 10, 1900.

The President, CLEMENT CLEVELAND, M.D., in the Chair.

DR. E. H. GRANDIN presented a specimen of

PYOSALPINX AND OVARIAN CYST

which he had removed from a woman on whom he had operated two years previously for a pyosalpinx of the other side. At the first operation he had punctured many small cysts in the left ovary, but the cystic degeneration had returned. At the first operation he had suspended the uterus from the parietal peritoneum by denuding the anterior surface of the uterine fundus and suturing it to the parietal peritoneum. The etiology of the pyosalpinx was probably gonorrhea. Dr. Grandin questioned the advisability of trying to save the appendages if it became necessary to remove those of one side for actual disease.

DR. GRANDIN showed a specimen of

RIGHT OVARIAN CYSTOMA AND LEFT CYST OF THE BROAD
LIGAMENT

which he had removed by hysterectomy. The ovarian cyst had been first removed and the ovarian artery on the left side tied. Anterior and posterior flaps were then made, and the uterine artery on the right side had been secured and finally the uterine artery on the left side. The left broad ligament and cyst had then been exsected. This method he preferred to packing and draining broad-ligament cysts.

DR. HERMAN J. BOLDT showed the following specimens:

CHRONIC CATARRHAL APPENDICITIS CAUSED BY TWO FECAL
CONCRETIONS IN THE APEX.

The patient was brought to have the right adnexa removed

and to be operated for prolapsus uteri. Examination revealed an extensive cervical and perineal laceration; there was descent of the large, flabby vagina, due to stretching of the perivaginal cellular tissue. The uterus was correspondingly low, with slight retroflexion. The right ovary was prolapsed and enlarged, the increase in size being probably caused by cystic degeneration. The right kidney had descended to half an inch below the level of the umbilicus. The seat of constant pain, however, was referred to the cecal region. From this pain, which was increased upon pressure, she had suffered over two years. Previously the pain had invariably been attributed as due to disease of the right ovary. Opening of the cul-de-sac for the purpose of inspecting the ovary verified the diagnosis of cystic degeneration. The cysts were destroyed with a Paquelin cautery and the ovary returned. After completion of the plastic operations, attention was turned to the appendix, although no enlargement of it could be felt through the parietes. On opening the abdomen it was found elongated, adherent, and the superficial vessels engorged. In the apex a foreign body was suspected from its hardness. Removal showed the concretions demonstrated; the rest of the appendical wall was not markedly thickened. The patient has been absolutely free from pain since the operation, and, after being about for two weeks prior to her return home, she said that she had not felt so well for years as she did then. The specimen is shown, with the history detailed, because I have had occasion several times to meet with similar cases of chronic appendicitis where no thickening of the bowel appendage could be demonstrated, and where removal showed concretions; in one instance a circumscribed abscess was present, with stricture of the lumen above it. The deduction can be drawn, after observing a number of such instances, that it is not necessary to feel a palpably diseased appendix to have an indication for operation; if the symptoms are of sufficient severity to cause semi-invalidism, and one can be satisfied from the examination that a pathological condition is present, an exploration is justifiable.

SUBMUCOUS FIBROID REMOVED FROM THE FUNDUS UTERI.

The patient had been curetted several times at other hands, without relief from the metrorrhagia which had been present several months, and from which she had become quite anemic. Her age was 36 years. The curette did not bring forth any material which seemed suspicious of malignancy, but it was evident that a neoplasm was present at the fundus of the enlarged uterus, presumably a fibroid polypus. The cervical canal not being dilatable, the cervix was incised and the growth removed without difficulty. I am of the opinion that it is invariably preferable to *incise* the cervix for the purpose of exploring the uterine cavity digitally, if this is intended, to either forcible or gradual dilatation. I have had occasion a number of times to open the anterior wall of the

uterus half-way up to the fundus, and so far have never seen any trouble following the procedure. One must only endeavor to be sure that the catgut used to close the wound is sterile and use only chromicized gut.

UTERINE FIBROID POLYPUS.

This polypus had its attachment near the fundus uteri, but the efforts at expulsion had caused it to protrude into the upper part of the cervical canal, the lower part of which, however, was not yet dilated nor readily dilatable. The vaginal portion of the cervix was also split in this instance to facilitate removal. The patient was a virgin, 24 years old, and had the usual symptoms accompanying such growth. She had been treated more than two months with medicaments to check the hemorrhage. I repeat the necessity of *carefully examining* patients with atypical bleeding from the uterus.

MULTIPLE FIBROMYOMATOUS UTERUS REMOVED BY VAGINAL HYSTERECTOMY.

The indication for operation was menorrhagia; excruciating dysmenorrhea during the entire flow, which continued from ten to fourteen days; pronounced vesical symptoms referable to the neoplasm; moderate pelvic pain during intermenstrual period, not sufficient to make the patient bedridden, but of such character to make her feel very uncomfortable. She was 34 years old and had never been pregnant. The convalescence was uninterrupted.

VAGINAL HYSTERO-SALPINGO-OÖPHORECTOMY FOR FREQUENTLY RECURRING ATTACKS OF PELVEO-PERITONITIS.

The patient was gonorrhoeically infected soon after marriage, and since then had been suffering with excruciating pelvic pain. She had numerous attacks of pelveo-peritonitis, and each menstrual period was in agonizing pain, which nothing but narcotics relieved. Local treatment undergone under various hands was negative in its results.

The small uterus was tightly wedged in the pelvis by the products of repeated inflammation, and removal of the pelvic organs consequently a very difficult task. Since the operation she has suffered only from reflex cerebral symptoms about the time of the former menstrual period, and these have also been gradually diminishing. The form of tubal disease was interstitial salpingitis with but little pus in the tubes.

CHRONIC SALPINPO-OÖPHORITIS, THE OVARY SHOWING UNUSUALLY WELL-MARKED MACROSCOPICAL CHANGES OF CHRONIC OVARITIS.

The patient, æt. 30 years, began to menstruate at the age of 16 years; always had dysmenorrhea, which gradually increased from year to year. At the age of 24 she married, but never conceived. During the two years prior to operation, intense

cephalalgia became associated with the previously existing dysmenorrhea. Dyspareunia was very intense. The slightest touch of the prolapsed diseased ovary caused intense pain. Removal of the tube and ovary by posterior colpotomy brought about complete relief, but, more important, from an etiological standpoint, as to the occasional causes of sterility, she conceived within three months after operation.

FIBROMYOMATOUS UTERUS REMOVED BY ABDOMINAL
HYSTERECTOMY.

The interesting feature of this large fibroid is that, although the true pelvis was tightly impacted by this large lobule, there was no constipation. The specimen further shows the uselessness and the danger of curetting in many cases of fibromyomata; nodules of the neoplasm causing the canal to be tortuous, and their superficial seat making them liable to undergo suppuration from the traumatism produced by the curette.

DR. R. B. TALBOT presented specimens as follows:

I. ECTOPIC GESTATION.

II. MULTIPLE FIBROIDS WITH FOUR-MONTHS PREGNANCY.

III. LARGE FIBROID, SUPPURATIVE IN CHARACTER, REMOVED
FROM PATIENT SIXTY YEARS OF AGE.

IV. LARGE AND SMALL DERMOID CYSTS IN WHICH FLUID
BECAME SOLID.

DR. BOLDT.—The specimen which Dr. Grandin presented is interesting. I can corroborate what he has said. It is absolutely useless to do a unilateral operation upon a pyosalpinx with the other tube in a condition of inflammation in disease caused by gonorrhea.

In regard to ventrosuspension and ventrofixation, I cannot see that a fixation can be called a suspension where the serosa has been denuded. In suspension we do not denude the serosa of the peritoneum.

DR. A. PALMER DUDLEY.—Work that I have done has been referred to. I am glad to have failure reported. They simply corroborate what I have said, that it is risky to do conservative work upon pyosalpinx of gonorrheal origin. If we can get a clear case, however, we should take chances to a certain extent. As an illustration of that I want to cite a case I had in one of our nurses from the school. She came in for retroversion. Upon examination it was found that the ovaries were simply sacs of water. They were split, scraped, and sewed together, leaving shells. She married six months later, and three weeks ago was delivered of a healthy child. It was not a case of pyosalpinx.

DR. GRANDIN.—I understood Dr. Boldt to say it was not gynecological, in these cases of submucous fibroids, to do radical work without first examining the interior of the uterus

with the finger. He states that it is his method to split the uterus anteriorly. My preference is to split it posteriorly. There is a larger reach and less likelihood of injuring the bladder and adjacent organs. It is a simple matter to strip the peritoneum posteriorly, split the uterus as high as you wish, and examine with the finger; however, this is simply a question of technique.

DR. JOSEPH BRETTAUER.—I agree with Dr. Grandin. I have had great difficulty in removing fibroids according to the method described by Dr. Boldt. Two weeks ago I made an anterior section, and had to put the bladder back and bisect the uterus up to the fundus. It was harder to close the wound than in a previous case where I had put my finger in the uterus and detected the attachment of the fibroid to the posterior wall. I split the wall and easily closed the wound in the uterus. I think also that the danger to neighboring organs is lessened by posterior section.

DR. GRANDIN.—Dr. Boldt does not understand the difference between ventrofixation and suspension of the uterus, as I wished to emphasize it. The former is the operation which, should the patient conceive, gives rise to trouble. It is performed as follows: The uterine body, whether anteriorly or posteriorly, is split to the fundus and scraped. Sutures are passed through fascia and rectus, body of uterus, fascia and rectus. Result, adhesion of the uterine body to the anterior wall. I discarded this method long ago. Suspension is a very different thing. The first step is scarification of either anterior or posterior surface of the body of the uterus. I then pass sutures anteriorly through peritoneal peritoneum, body of the uterus, peritoneal peritoneum, and tie. The result is that in course of time the uterus slips down, pulling with it the adherent peritoneal peritoneum, thus forming a dense, fibrous band from the extremity of which the uterus floats free. In suspension of the uterus there is no fixation; in ventrofixation there is. The first method is to be commended, and, as I hope to prove in a paper which I am now preparing, allows the uterus freedom of motion in every possible direction, and cannot, in the event of pregnancy, interfere with gestation.

DR. G. W. JARMAN.—Referring to Dr. Boldt's seventh case, chronic salpingo-ovaritis, I would like to ask him whether the sterility of the patient was due to the diseased condition of the ovary.

DR. BOLDT.—I can only say that the patient never had conceived; the condition of the ovary caused pain and dyspareunia. In three months after the operation she became pregnant. With regard to incision, I prefer it to dilatation. The uterus should not be dilated, manually or with an instrument. It should be incised, not anteriorly, but posteriorly, in my opinion.

DR. GRANDIN.—This [Dr. Talbot's case of ectopic gestation] is only another case proving the uncertainty which surrounds the diagnosis of ectopic gestation.

DR. BOLDT.—A number of months ago I had a case similar to this [case of multiple fibroids with pregnancy]. I advised the patient to go to term, and, if the impaction remained, submit to Cesarean section. She was placed in the knee-chest position four or five times daily. Upon confinement at the Sloane Maternity it was found that the fibroids had receded, giving no trouble. I mention this to show the peculiar features of fibroids.

DR. DUDLEY (discussing Dr. Talbot's case of dermoid cyst with solid contents).—I believe it is characteristic of the dermoid that the fluid, if allowed to stand, will take on that solid condition, being largely composed of fat. I have seen several of this kind. There is great danger, in opening these cysts, of allowing the fluid to escape into the abdominal cavity. It is most deadly in its effect upon the peritoneum. I lost a woman at the hospital last month from that accident, not knowing at the time of operation that the cyst was dermoid. The cystic portion of the ovary was ruptured and two teaspoonfuls of the fluid escaped into the abdominal cavity. There was cellulitis of all the abdominal muscles as a result. Pus poured out between recti and fat and through the skin. The patient lived about four weeks and then died from poisoning. I would lay particular stress upon the danger that attends allowing any of the contents of a dermoid to enter the abdominal cavity.

DR. W. GILL WYLIE then addressed the meeting. His subject was

A CLINICAL STUDY OF THE FUNCTIONAL DISTURBANCES OF THE OVARY.

He thought the subject might more properly have been announced as "The Relation of Functional Disturbances of the Ovary to Abdominal Surgery." In a brief review of the history of abdominal work, he said that up to the '70's very little had been done; then functional disturbances and diseases of the ovaries and the condition of the uterus were so troublesome in the failure of ordinary treatment that Battey, in this country, suggested that ovaries, even when normal, be removed to prevent dysmenorrhea in its various forms and hemorrhage. Hegar, abroad, suggested the same measure in cases of fibroids, and Tait in regard to diseases of the appendages. The result was that many cases were operated upon for which the trained gynecologist of to-day would have sought other means of relief.

The speaker said that after his first twenty-five or fifty cases he had never removed cystic or diseased ovaries unless they had been occluded, and had never removed ovaries for hemorrhage or dysmenorrhea. In his opinion, the surgeon who could not control uterine hemorrhage without removal required help.

He then quoted from a paper printed in the *Medical Record* of March 31, 1883, read by him before the New York State Medical Society in February, 1888.

Dr. Wylie added that he had not changed his views since

writing that article. In looking at statistics of the death rate as given in annual reports of various hospitals, he had been amazed to find that out of one hundred or more abdominal operations, from fifteen to twenty per cent had been cases of microcystic ovaries without adhesions. He said that many women complained of symptoms indicating dysmenorrhea in whom, upon examination, imperfect development of the uterus had been discovered. One symptom usually was pain in the left ovary. In this case the speaker's diagnosis was enlargement of the ovary. He thought in those cases there was more or less aborted ovulation; that ova attempted to form, but, owing to the imperfect development of the ovarian tissues, only resulted in small cysts or bodies, which burst. This fluid was, with certain of the ova, taken up by the Fallopian tubes and passed to the uterus. The uterus, not perfectly developed, could not carry off this fluid and small cysts were formed. Cystic ovaries often became as large as a lemon, but they burst upon pressure, and any slight adhesions that existed frequently absorbed. In a great many of these cases where the ovaries were not sufficiently diseased to justify removal it would be better if the uterus were taken out and the ovaries left in. After the removal of ovaries the uterus became hyperesthetic; the inside could not be touched without giving excruciating pain.

The speaker believed that more reflex disturbance was caused by disease of the uterus than from the ovaries, unless there were new growth or hardening of the arteries. In his opinion there was almost no disease of the ovaries, except that of a suppurative nature, which would warrant removal.

He continued that he had almost discarded the idea that hysteria caused symptoms usually attributed to it; that is, if a nervous, hysterical woman were treated until she could be placed in the Sims position, and a sound curved to suit the shape of the uterus could be passed without causing pain or bleeding, reflex symptoms would disappear. If sterile, treatment would put her in a condition to become pregnant.

Dr. Wylie concluded by citing cases illustrative of the unfortunate results of unnecessary operative interference.

DR. BOLDT.—Dr. Wylie has, by the title announced on the card, led us all to anticipate something new this evening.

He has described, not functional disturbance, but a pathological condition. The question is, whether it requires operative interference or not. Small cystic degeneration of the ovary is always the result of an inflammatory condition—chronic ovaritis. If Dr. Wylie will study the pathology of these cases under the microscope he will be convinced that the trouble is not functional, but pathological. I think none of us would operate for small cystic degeneration of the ovary at the present time, and I do not understand how any one could have done so in the past.

With regard to local treatment, in that class of cases I think it injurious, especially if the patient be unmarried. With the

proper form of physical exercise, hygienic surroundings, proper diet, and building up of the general system, these cases will recover.

DR. WALDO.—Dr. Wylie indicated indirectly that the uterus was more at fault in the production of these symptoms than the ovary, and suggested that it would be better to take out the uterus than the ovaries. I would like to ask him whether, in cases of this kind where extensive adhesions are often found, he thinks the ovaries should come out with the uterus.

DR. WYLIE.—I do not.

DR. HENRY C. COE.—I wish Dr. Wylie in concluding would throw light on the cause of premature menopause not only in young married women but in girls. It usually is accompanied by increase in weight. Menstruation at first is regular, then it ceases. The patient seems in perfect health, is able to engage in athletic sports, has no symptoms, and the time for menstruation passes by without disturbance of any kind. I have such a case now. After giving electrical treatment and medicines, I advised her to pay no further attention to the matter.

I have noticed an intimate relation between an increase in weight and the diminution of the ovarian products. I have had patients reduce their weight thirty or forty pounds when menstruation has returned. Examination has shown the uterus to be normal, insensitive, and there has been no pain. The question is, what is the condition of the ovary? I have examined but one case. There the ovary was completely atrophied. This appeared to be a case of functional disturbance or suspension of function.

DR. J. E. JANVRIN.—In cases such as Dr. Wylie has brought before us the ovaries are enlarged rather than atrophied, but the uterus is undeveloped—a condition quite common in young unmarried women.

I agree with Dr. Boldt that in these cases there is a diseased pathological condition of the ovary, cystic degeneration of a mild type, which, if treated very little or possibly not at all, locally, usually will recover.

As a rule, where there is a catarrhal condition of the endometrium amounting to anything, I curette thoroughly with a sharp instrument, advise hot douches, and let the patient take care of herself. She usually recovers. In addition I insist upon proper physical exercise and prescribe tonics to build up the system.

I believe these are not functional disturbances, but a pathological condition affecting the ovary, and as a result of that a pathological condition, possibly, of the endometrium. I have found the uterus slightly enlarged and very sensitive and tender.

DR. ABRAM BROTHERS.—I think we all have seen cases like those referred to by Dr. Wylie, in which cyst of the ovary has been diagnosticated and the patient, perhaps, prepared for

operation, when the cyst has been ruptured before the first step has been taken. I recall a case seen by Dr. Boldt and myself where we found a large tumor of one ovary. The patient, after having been told that she should have the tumor removed, went to another gentleman. In the course of his examination the tumor burst and she felt so well that she never has been operated. I had a case two years ago in which a woman suffered much from dysmenorrhea. We found on the left side a tumor the size of a hen's egg. The ovary was removed by vaginal section. She felt relieved, but came back a year later with a similar tumor on the other side. She did not care to enter upon a premature menopause, and I promised not to remove the ovary if the condition could be relieved without doing so. I reopened the Douglas cul-de-sac and found a cystic tumor. On puncturing it I discovered that it contained liquid blood instead of serum. The patient had been menstruating into her own ovary. I believe that accounts for many swellings, and that we often find in the enlargement of cystic ovaries real hematometra.

DR. DUDLEY.—I had hoped that Dr. Wylie, in his clinical study of the functional disturbances of the ovary, would bring out something relative to the causes of the condition rather than confine himself to the condition itself. I believe the study of functional disease of the ovary is a vast one. To encompass it thoroughly one must take into consideration climate, surroundings, exposure during menstruation, general health, occupation—in fact, any circumstance tending to produce a chronic condition of the pelvic vessels. My belief is that if a girl or woman has no passive congestion or long-continued gonorrhea of the ovary, her pelvis will not show these conditions. I believe the starting point of disease to be disturbance of the circulation within the ovary, be the cause what it may—tight lacing, chronic constipation, long-continued holding of the urine, the state of the uterus, or chilling of the pelvis. I believe Dr. Wylie cures without operation, by attending to the circulation. If such disturbance be sufficiently long continued, we all know the result is disease of the endometrium, leading to a condition mentioned by Dr. Coe, that is, abeyance of the ovulation. The capillaries are surcharged with blood, ova are improperly developed and do not reach the uterine cavity, attacks of peritonitis follow, then there is cirrhosis, fat ovary, and finally a hard capsule. Anything that disturbs the circulation in the organs will affect the innervation. When that is disturbed, disease will result.

DR. GRANDIN.—I should like Dr. Wylie to explain what he means by functional disturbances of the ovary. If he means that there is disturbance in menstruation, we must admit that so far we are not sure whether it is ovary, tubes, or uterus that has everything to do with that process. If he means by functional disturbances that the woman complains of pain, and on examination the ovary is found to be enlarged and congested, to my mind "functional disturbance" becomes organic

disease. In the class of cases he mentions it is an open question whether the uterus is at fault instead of the ovary. Again, I do not see how he is able to make the very fine diagnosis of microcystic ovary without opening the abdomen. If the ovary is enlarged sufficiently to be palpable, and the woman complains of pain and has an atrophied, undeveloped uterus (after the age of 20), and curettage, the administration of such hygienic measures as suggest themselves, and the application of the stem fail, I see no alternative but extreme section. If the ovaries are large and full of cysts there is little use in leaving them in, wholly or in part; they will have to be taken out later. I do not make the remarks in a spirit of carping criticism, but wish to know what Dr. Wylie means by "functional disturbances of the ovary."

DR. WYLIE.—I will attempt to enlighten Dr. Grandin as to my meaning. If a person suffered from indigestion and had discomfort and pain, repeated at intervals, the trouble would not be considered the result of diseased stomach or intestine, but of functional disturbance. If an ovary forms cysts which pressure bursts, the disturbance is functional. My "fine diagnosis" is made, not by anxiety to cure by abdominal section, but by waiting. The pain usually subsides, the cysts burst or disappear, and the patient recovers. Associated disease of the uterus may often be cured at the same time by the use of a drainage tube, sometimes called a "stem."

I am not a pathologist, working constantly in the laboratory, and my talk was based largely on reports received from Dr. Welch, whose education in this line I consider better than my own. Many years ago, when I sent cystic ovaries to him, he always returned them with the statement that, so far as pathology was concerned, they were practically normal. I believe he would say the same thing to day. A question of this kind came up some time ago, in a case where an eminent gynecologist of this city and I differed as to whether the tubes and ovaries were diseased or not. I claimed that they were not. The woman complained of pain in the side. She consented to operation and two men were selected in place of the eminent gynecologist to decide the question. The abdomen was opened and a beautiful, characteristic cystic ovary was found on the left side. I took it out rather against my views and sent it to Dr. William H. Welch. The report came back that it was normal.

About ten years ago in Washington an older member of the American Gynecological Society reported 126 cases of operations done for the removal of appendages, tubes and ovaries. He stated that out of this number 18 were cases of pyosalpinx. Out of the 126, about 43 had had adhesions. The others had not had adhesions and the tubes were not occluded. I was bold enough to tell him that I thought that any man who would take out tubes and ovaries where the tubes were not occluded was making a mistake. In the cases I saw then, 98 per cent had tubes occluded, otherwise I should not have taken them out for diseased appendages.

There is not inflammatory disease of any consequence that requires the removal of the ovary, unless there be new growth, except where adhesions cover the ovary and the tubes are occluded. In cystic degeneration from disease of an inflammatory nature there always will be adhesions and pain. I recently had a case of salpingitis caused by gonorrhea. I undertook to remove the tubes and ovaries, because it had been thought this could not be done on account of adhesions. The uterus proved to be normal. Not caring to deprive the patient of her organs unless absolutely necessary, I broke the adhesions, took out the worst ovary, and left portions of the tube and the normal ovary. The patient was relieved of pain on the side where the ovary and tube had been removed, but had constant pain on the right side and the uterus was immovable and hyperesthetic. I then curetted. Afterward I was obliged to operate on the other ovary. I believe the same disease that caused the salpingitis and cystic left ovary had been communicated to the right ovary. In such cases ovaries and tubes must be removed. I cannot see how men working in hospitals can operate and remove tubes and ovaries in fifteen or twenty per cent of their abdominal work, not find adhesions, and yet consider the organs sufficiently diseased to warrant removal.

I expected to show to-night the relations of what I call functional disturbances of the ovary to abdominal work. In what I consider functional disturbances I have not been able to discover any disease which does not correct itself under simple treatment. Sometimes disturbances of the rectum will interfere with menstruation. The ovaries appear to be enlarged and sensitive, but after treating the associated condition they subside. A trained gynecologist who is up to date does not operate in these cases. Every young man who has seen operations for six weeks goes home and experiments on women. I think this Society would do well to investigate the subject, and if mistakes of that kind are discovered, show them up.

TRANSACTIONS OF THE OBSTETRICAL SOCIETY OF LONDON.

Meeting of Wednesday, May 2, 1900.

The President, ALBAN DORAN, F.R.C.S., in the Chair.

DR. THOMAS WILSON, of Birmingham, read a paper on

THE RELATIONS OF ORGANIC AFFECTIONS OF THE HEART TO
FIBROMYOMA OF THE UTERUS.

He called attention to the necessity for observing the possible evil effects produced on the other organs of the body by the growth of the uterine fibromyomata. He showed that the

conjunction of serious organic affections of the heart with the presence of a fibroid is sometimes casual, but in a much larger number of cases the connection between the diseases of the two organs is causal, the heart affection being set up by the growth of the fibroid, or both being dependent on a common cause. Occasionally the heart may be affected directly by the pressure of a very large cystic fibroid, or indirectly by a tumor pressing on the ureters and so leading to renal degeneration, that in its turn leads to cardiac changes. Much more commonly a fibroid of moderate size leads through menorrhagia to anemia, and thus to cardiac dilatation or degeneration; or, again, in the early stages of the growth of a tumor cardiac hypertrophy may be found, and this latter may give place to dilatation and degeneration. It is not at present understood how the hypertrophy is brought about, but the condition is in some degree analogous to the enlargement of the heart found in pregnant women; there is the important difference, however, that the causing affection, pregnancy, in the latter case is definite in duration, whereas the period of active growth of a fibroid is indefinite.

He described the case of a patient who had an interstitial fibroid for four and a half years; there had been several attacks of retention of urine, and the symptoms of cardiac weakness were decidedly increased by ergot. Double oöphorectomy was performed, and was followed by alarming heart failure lasting several days. The patient made eventually a good recovery, and the condition of the heart showed a gradual but very marked improvement. Six other cases in which organic disease of the heart was apparently caused by the growth of fibroids were shortly related. The nature of the cardiac affection, the varieties of uterine fibroids which were present in the cases, the cardiac symptoms and signs, and the course and prognosis were then in turn considered, and it was pointed out that after a successful operation the heart tends to recover its tone in a really remarkable degree.

The presence of the cardiac disease favors the occurrence of thrombosis both before and after operation; it forms a contra-indication to the use of ergot in the treatment of the fibroid, and it may be an important and even urgent indication for operative interference. When an operation is undertaken every effort must be made to reduce as far as possible the severity of shock and the risk of subsequent heart failure, and ether should be the anesthetic administered.

THE PRESIDENT commended Dr. Wilson for his scientific treatment of a subject handled too empirically at present. He had himself frequently observed circulatory troubles independently of anemia in patients with fibroid tumors. One was subject to attacks of syncope at every menstrual period for two years; three years ago he removed the tumor, as it was growing rapidly, with both ovaries. Since then no attacks of syncope had occurred. A year ago he removed a uterus with suppurating fibroid, leaving one ovary. The pulse, irregular

before the operation, had been regular ever since. Chavannez and Fieux, of Bordeaux, had recently reported a somewhat similar case after removal of a fibroid uterus and both ovaries; the pulse, previously very intermittent, became and remained perfectly regular.

DR. AMAND ROUTH recalled a case which proved the serious action of ergot in the cases under discussion. He had elevated a large, impacted pelvic fibroid by hydrostatic pressure in a patient aged 46. Her only symptoms had been due to pelvic pressure, and these were at once relieved. Her heart's action was feeble. Against his advice she took ergotin pills, and soon became very weak and ill, and stated that within an hour of taking a dose she had pains over the cardiac area, with breathlessness and palpitation. She was seen by Sir William Broadbent, who stated that he found her arteries were much tightened, and his previous experience in such cases enabled him to fix on the ergot as the cause of the heart trouble and of the pseudoangina. The patient slowly improved when the drug was discontinued. Inasmuch as ergot was so generally given in cases of uterine fibroids, he thought it not unlikely that unsuspected cardiac debility in such cases would be aggravated by the drug and would explain the asthenia which was not infrequent.

DR. HERBERT SPENCER considered the paper a very valuable contribution to our knowledge of the effect of uterine fibroids on the organism. He thought that many of the symptoms of heart disease and the murmurs were due to the anemia caused by the uterine hemorrhage. Anemia thus caused was an urgent indication for operation, especially in young subjects. It was remarkable how rapidly in some cases the symptoms disappeared and health was restored, even after the removal of the ovaries only, the tumor remaining. He doubted whether fibroids often gave rise to hypertrophy of the heart. In pregnancy the heart was very frequently not hypertrophied.

DR. BLACKER thought that there were considerable difficulties in determining the causal relationship between a fibroid tumor and organic heart disease. He wished to know upon what number of cases of fibroid tumor Dr. Wilson based his experience. With influenza so common and so often followed by cardiac mischief, the previous histories of the cases under discussion were of great importance, for otherwise it would be difficult in any given instance, apart from cases of grave anemia, to say that a dilated heart was due to the presence of a fibroid tumor. He also asked why Dr. Wilson thought that the presence of cardiac hypertrophy with a fibroid tumor was an indication for operation.

DR. HEYWOOD SMITH, in reference to Dr. Spencer's view that hypertrophy and dilatation of the heart were probably due to the anemia produced by the loss of blood, contended that it was more probably due to the heart having to overcome increased resistance caused by the extended area of circulation produced by the tumor, as well as the resistance through a

tissue so unyielding as a fibrous tumor. In confirmation of this proposition he stated that Dr. Bedford Fenwick some years ago called attention to the fact that a similar hypertrophy and dilatation of the heart was to be observed in many cases of large ovarian cysts where a large increased area was added to the circulation, giving a greater stress of work to the heart.

DR. THOMAS WILSON, in reply, said that in the cases recorded in the paper the presence of fibroid tumors appeared to be the only probable exciting cause of the cardiac condition. In none of the patients was there a history of influenza or other of the common causes of derangement of the heart's action or nutrition, none of the patients were neurotic in the sense in which this term is generally applied. In many of the cases chronic anemia seemed to be an important factor, but in several of the cases there was no anemia. With regard to the relative frequency of heart affections in cases of fibroids, Dr. Wilson was not in a position to give statistics at present.

The following specimens were shown: DR. W. W. H. TATE: (1) Large cervical fibroid removed by enucleation, followed by vaginal hysterectomy; (2) Suppurating ovarian tumor obstructing labor removed by laparotomy. DR. P. HORROCKS: Fibroids of the uterus with great distension of the Fallopian tubes (due to tubercle?). DR. C. HUBERT ROBERTS: (1) A uterus with cancer of the cervix and adenoma (?) of the fundus, removed by vaginal hysterectomy; (2) Myxoma of chorion, expelled at seventh month. DR. A. L. GALABIN: Double pyosalpinx, intercommunicating. DR. H. RUSSELL ANDREWS: Imperforate rectum with prolapse of uterus and vagina in a child one day old.

BRIEF OF CURRENT LITERATURE.

OBSTETRICS.

Puerperal Inguinal Parametritis.—G. E. Herman¹ believes the reason why cellulitis after delivery is usually inguinal is because during pregnancy the cellular tissue at the side of the uterus becomes looser, and the peritoneum is raised above the brim of the pelvis, so that at the end of pregnancy there is loose cellular tissue extending from the side of the uterus to the groin. Hence inflammation tends to spread in this direction. The two main causes are (1) childbirth and (2), apart from pregnancy, injury to the cervix. Most of the patients are young simply because most puerperal women are young. The cause of the trouble seems to be due rather to compression, displacement, and stretching of the tissue than to direct inoculation; the above-mentioned injuries seem to render the tissues a suitable nidus for the growth of micro-organisms. If the infection were due to direct infection the

symptoms would immediately follow inoculation. The illness does not, as a rule, immediately follow delivery. Of 63 cases 29 began in the first week, 17 in the second week, the rest after the second week. Of the cases taken ill within a week, 21 ended in resolution and 8 went on to suppuration; of those in the second week, 7 ended in resolution and 6 in suppuration.

Of the symptoms, pain is prominent and is of a burning or shooting character, and generally is present from the beginning. Rigors occur in about one-fourth of the cases; they seem more frequent in the cases which come on early, and they do not modify the prognosis. Weakness is also marked, and is the reason commonly given why they have to go to bed again. Fever runs rather low, the average maximum temperature being 101.9° . In this condition we find a swelling starting from the anterior superior iliac spine, rising to within one or two finger breadths below the level of the umbilicus, and then running horizontally inward to within about two inches from the middle line, then sloping downward, reaching the level of the symphysis about half an inch beyond the median line. The inner part of the swelling is the uterus.

The average length of illness in non-suppurative cases was sixty-seven days; in the suppurative cases, ninety-three days. The essential thing is to keep the patient at rest and to maintain her strength by suitable food, while relieving her pain by narcotics if necessary. When pus is present it must be let out as soon as possible.

Dublin Method of Effecting the Delivery of the Placenta.—Henry Jellet states that the method of expressing the placenta by external manipulation was originated in Dublin; that Credé's method, when originated *de novo* in Germany, was identical in principle with the Dublin method. He believes the method should be called "the Dublin method" instead of "Credé's method."

Treatment of Rupture of the Parturient Womb.—A. V. Wendell,* in threatened uterine rupture, advises that the woman be delivered at once by the method which does not increase the excessive intrauterine tension. After rupture occurs, delivery by the natural way is permissible only if the uterine injury is not aggravated thereby. If the true conjugate diameter of the pelvic inlet measures less than 8 centimetres, a completely intraperitoneal fetus should be delivered by abdominal section; but if the conjugate measures 8 centimetres or more, the uterus should be removed by vaginal hysterectomy and the child delivered by the feet through the natural passages. If life is detected in the child after the mother's death, the postmortem section should be performed. The uterine tampon is useful only as a dressing to prevent intestinal prolapse or to retain loops of intestines within the abdomen until the case can be submitted to operation.

Conservative surgery exposes the woman to the serious risk of subsequent rupture, and should therefore not be elected unless expressly commanded by the patient or immediate

relatives. Vaginal suture is open to the objection that bleeding arteries in the parametrium are apt to be overlooked. When laparotomy becomes necessary for the birth of the fetus, the uterus is to be removed by supravaginal amputation, with the extra- or intraperitoneal treatment of the stump according to the exigencies of the case or ability of the practitioner. Vaginal hysterectomy is the elective procedure in all cases, but should be supplemented by abdominal section whenever necessary.

Bicornate Uterus.—Charles H. Winn⁹ cites a case of bicornate uterus which had become pregnant. Some years ago an abortion had been performed and one macerated and one normal fetus removed; it is probable both horns were pregnant. A second twin pregnancy occurred later, both horns being occupied; an abortion was done on one side and that horn curetted. The patient was troubled with severe morning vomiting, and upon examination later it was discovered that the other horn contained a four-months fetus. This fetus was born at term. It weighed nine pounds and was extracted by means of forceps. The child and mother are well. This case is probably one of superfetation, as the child was born nearly ten months after the last menstruation, and the abortion, which was done one month from the last menstruation, showed by the size of the pieces removed that the pregnancy in that horn was of more than one month's duration. The tolerance of the pregnant uterus is also well shown by the persistence of pregnancy in spite of catheters, abortion, sepsis, curetting, intrauterine douches, and iodoform gauze intrauterine packing. The woman admitted performing four other abortions than the last one here cited.

GYNECOLOGY AND ABDOMINAL SURGERY.

Cholecystectomy for Gallstones.—C. T. Gibson² states that cholecystectomy as a means of treating cholecystitis and cholelithiasis is called for under the following conditions: In all cases of cholecystitis, with or without stones, acute or chronic, provided that the gall bladder and gall ducts can be properly explored and that the conditions promise an easy removal of the gall bladder. It is to be borne in mind that the more distended the gall bladder the more likely is its separation from the liver to be easy. And provided that the common and cystic ducts (sometimes also the hepatic) are demonstrated to be free from stone, and that in addition to stone there is no other obstruction of the lumen of the common duct such as a tumor, benign or malignant, of the pancreas. The operation is also recommended even when its performance is difficult or possibly entails a slightly greater risk in a limited class of cases—that is, when it is the only satisfactory way to deal with the gall bladder and as a prophylactic measure against malignant disease in the presence of long-standing irritation. If these various limitations receive a strict interpretation, the

number of cholecystectomies that are justified by the above indications will be comparatively restricted, and the operation will be done only under circumstances that permit of its greatest usefulness with a minimum of risk.

The Surgical Treatment of Primary Renal Tuberculosis.—Otto G. Ramsey,³ from a careful study of individual cases and statistics, comes to the following conclusions: 1. That in renal tuberculosis some form of surgical treatment is always indicated. 2. That this surgical treatment may have a palliative or curative effect in view, depending upon the condition of the patient and extent of the disease. 3. That nephrotomy as a palliative operation for the immediate relief of dangerous symptoms is most valuable, and that it does not preclude a later nephrectomy. 4. That resection of the diseased part of the kidney is contraindicated in every case of renal tuberculosis. 5. That nephrectomy or nephro-ureterectomy is indicated in every case where tuberculosis has not developed in other organs or where there is no fatal disease of other organs. 6. That tuberculosis of the bladder or a small focus of tuberculosis in one lung are not considered as contraindications to nephrectomy. 7. That primary nephrectomy or nephro-ureterectomy, when performed in suitable cases, has been followed by final cure in 56 per cent of the cases operated on. 8. That with the present advances in the methods of examination and in the technique of operations, the percentage of final cures should be materially increased.

Removal of the Bladder as a Preliminary to or Coincidental with Hysterectomy for Cancer.—F. H. Martin⁴ believes that this operation may become something better than a desperate alternative. In the removal of the bladder the ureters should be transplanted into the rectum or sigmoid flexure, in order to (a) provide reservoir room as a substitute for the bladder, (b) in order to obtain continence, (c) in order to obtain emptying power under control of the muscles of the individual.

The principal objection to making the lower bowel a substitute for the bladder is the supposition that nephritis, as the result of ascending ureteritis, will invariably occur as the result of uretero intestinal anastomosis and early death will be the inevitable outcome of the procedure. This supposition is supported by (a) theoretical grounds based upon the assumption of the inherent inability of the ureters to resist the septic bacteria always found in the intestines; (b) on the result of innumerable experiments upon animals, which records show almost without exception destructive infection of the kidneys; (c) the death of 3 cases from nephritis and pyonephritis in the 48 cases on record which convalesced from the primary operation.

The negative to the supposition that destructive nephritis will invariably occur as the result of uretero-intestinal or vesico-intestinal anastomosis is supported by (a) theoretical grounds based on the assumption that nothing but actual experience in the human individual can prove that the ureters

and kidneys may not immediately resist or rapidly acquire an immunity to infectious material found in the intestines, if they are artificially deflected into these organs; (b) the record of 48 human patients with vesico- and uretero-rectal transplantation living, and a large percentage still well at periods varying from a few months to twenty-four and a half years; (c) the record of human patients with skin implantation of the ureters living at varying periods of from one to eighteen years. By this operation the amount of tissue that can be safely removed is materially increased.

Intra-abdominal Operation for Retroverted Uteri.—G. W. Kaan⁴ when operating for this trouble picks up the round ligament and peritoneum together with a double hook, about midway between the cornu of the uterus and the internal abdominal ring; then passes a suture of silk subperitoneally from the uterus as far outward along the round ligament as seems necessary. The tissue is puckered along this suture, the two ends of which are then tied together with moderate traction. To avoid its cutting through, the silk used is of medium size, and is passed into the tissue of the fundus at its point of entrance and through ligamentous tissue at its exit. The strain on this stitch, however, is not nearly so great as upon the stitches of a ventral suspension, which drags the uterus out of position.

Gonorrhea in the Female.—William Gardner⁵ in the acute stage puts the patient to bed and keeps her there. The diet should be unstimulating, the bowels regulated by saline purgatives, and warm hip baths and frequent soothing irrigations of the genitals be employed. The use of linseed tea by irrigation and douche is very grateful to the patient. The acute stage having passed, germicidal douches of permanganate of potash 1:5000, bichloride of mercury 1:5000 to 1:2000, or formaldehyde 1:4000 to 1:2000 may be employed. The douche should be given with the woman in the dorsal position. If the patient lies still for a time after the douche, there is a tendency for a pool to form, and for this reason it is best to wash out the vagina with a little warm water. The douche is merely accessory to the careful and thorough application, to the whole of the affected surface, of nitrate of silver, twenty to sixty grains to the ounce. The surface must be wiped clean and dry, and the solution thoroughly applied by the swab with pressure till every part is whitened. Protargol and argonin may be used instead of AgNO_3 . The urethra and cervical canal are best treated by instillations of the same solutions. In the treatment of the uterine cavity in all but the most advanced chronic stage, local treatment must be avoided. When the tubes and ovaries are involved, Gardner counsels patience and rest. By long rest in bed, good nursing, and judicious symptomatic treatment, a fair percentage of such cases will get well.

Diffuse Septic Peritonitis and the Elevated Head and Trunk Posture.—G. R. Fowler⁶ reports three more cases of

septic peritonitis treated by this method. All the cases made good recoveries.

Conditions Simulating Appendicitis and Peri-Appendicular Inflammation.—E. G. Janeway,* in describing the different lesions which can be mistaken for appendicitis, gives neuralgia as one of the troubles. The cases in this category relate to those neuralgias whose origin is obscure and cannot be referred to any abnormal condition of any organ. There are neuralgic pains reflected from above, as in pneumonia and pleurisy. Another source of difficulty in diagnosis is afforded by the condition of the right kidney. Among these conditions may be mentioned renal colic, when somewhat protracted, and especially when accompanied with fever. Still greater trouble has been occasioned by hydronephrosis, for in this trouble there is a swelling on the right side with some tension of the abdominal muscles. Intermittent hydronephrosis, hydronephrosis with a displaced kidney, and a movable kidney may be mistaken for appendicitis. Among the intestinal sources of error in diagnosis are ulcers of a comparatively latent course, gastro-intestinal catarrh with colic. Tubercular ulcers, with tuberculous peritonitis over and about the cecum, may give rise to very great difficulty in diagnosis. Fecal impaction may at times simulate peri-appendicular inflammation. There is a class of cases in which there exists an ulcer or narrowing, non-malignant, of the hepatic flexure of the colon, which may be accompanied from time to time by accumulations of feces in the cecum and colon. These patients have occasional fever also. These combined events may give rise to considerable trouble in diagnosis. The pain and tenderness accompanying certain cases of typhoid have led to an operation for appendicitis, as have also the general pains of follicular tonsillitis. As other troubles which may cause errors in diagnosis may be mentioned abscess of the ovary, salpingitis, retained menstrual fluid, retroperitoneal abscess, and at times hypochondriasis.

Extirpation of the Uterus for Excessive Hypertrophy and Prolapse.—T. A. Helme¹ reports two cases of this variety. In both cases there was great hypertrophy of the uterus, especially the cervical portion, with protrusion of the lower part of the cervix through the vulva, together with the anterior vaginal wall and portion of the bladder and urethra. In both cases the fundus uteri was to be felt behind the symphysis pubis. In one case the sound passed six and one-half inches, in the other five and one-half inches. In both cases hysterectomy was performed, careful attention being paid to the drawing together of the peritoneal surfaces and the cut ends of the uterine ligaments, and the making of a broad union between the anterior and posterior vaginal walls and their fixation to the "central knot" formed by the remains of the various uterine ligaments. Both operations were successful.

Acute Senile Endometritis.—L. H. Dunning¹⁰ presents the clinical history and pathology of acute senile endometritis,

which he thinks has not been duly recognized and adequately described. He gives a detailed history of two cases upon which he did hysterectomy, and presents the histological findings in each case. The cases were in both instances of women 63 years of age in whom the menopause occurred many years previously. The clinical history in its main features was identical in both cases. The women had been well until a short time (one and three months) previous to examination. There had been no uterine discharge. At the beginning the discharge was described as thin and irritating. Shortly it became sanguineous and offensive. Pain appeared in the pelvic region. General lassitude and rapidly growing ill health appeared. There were backache, bearing-down pain, and some vesical disturbance. The skin was dry and sallow; this was marked in the case of longest duration. In this case the general appearance suggested cancer. The uterus in one case was in normal position, in the other retroverted. A diseased tube and ovary could be palpated in one. The external os was patulous and the internal os permitted the easy passage of a uterine sound. There was senile vaginitis in both cases. Hysterectomy was done in both cases. Both uterine cavities were distended by a foul-smelling, sanguino-purulent fluid. A microscopical examination of both uteri was made and findings reported. Microphotographs of sections were also presented.

The author presented the following summary and conclusions:

1. The lesion found in both uteri was an acute inflammatory process. It may be properly denominated acute senile endometritis.

2. The characteristic pathologic features of the inflammation are: (a) A thickened endometrium, the free surface of which is devoid of its epithelial layer. (b) Increased vascularity, with peculiar arrangement of small blood vessels. (c) Small round-cell infiltration. (d) Diminished glandular elements. While a few glands are to be distinctly seen, in many of them their epithelium is desquamating and their lumen filled with granular debris. They may be said to be functionless glands. (e) Degeneration of the coats of the arteries of the muscular layer of the organ. In one specimen (No. 11) this degenerative process is distinctly hyaline. (f) In not one section examined from various parts of the organ could there be found any increase of connective tissue.

3. The mucosa of both the cervix and body is involved in the inflammation, but it is more marked in both cases in the body of the uterus.

4. The small round-cell infiltration extends into the upper muscular tissue, though the inflammation is more marked in the mucosa.

5. In both cases one uterine appendage was diseased; in one the ovary being cystic, in the other one ovary cystic and the Fallopian tube inflamed. In this case there was slight recent peritoneal adhesions.

6. The microscopical appearance in these cases bears but slight resemblance to that found in cases of interstitial endometritis.

7. In one case the acute inflammation seems to have developed without any preceding chronic inflammation. In the other case the acute attack may have been an acute exacerbation of a chronic inflammation.

8. In one case there was marked retroversion of the uterus, in the other the uterus was in normal position, and in neither case was there marked stenosis of the internal os, yet there was a considerable accumulation of fluid within the uterine cavity.

9. The presence of diseased appendages in both cases and of pelvic peritonitis (mild) in one seems to indicate that the inflammation is prone to extend beyond the limits of the uterus, and if such extension is demonstrable by combined examination an extirpation of the uterus and appendages is indicated.

Paranephritic Fibrolipoma.—Chavannaz¹¹ describes a case of paranephritic fibrolipoma which was partially extirpated. The patient died soon after, and the remaining portion of the tumor with that previously removed weighed 7,800 grammes. The growth, which apparently originated in the perineal tissue, was interesting from its situation, its upper extremity having perforated the diaphragm and being separated from the left lung by the diaphragmatic pleura.

Fibromyoma of the Ovary.—Chavannaz¹¹ reports, on account of its rarity, the removal of a fibromyoma of the ovary which weighed about ten pounds.

Vesico-vaginal Fistulæ.—J. Vitrac,¹² in concluding a lengthy paper upon this subject, calls attention to the disadvantages of dorsal decubitus. He shows that when the fistula is open nearly all the urine passes out through it; and that after it has been closed the accumulation of urine takes place up to the level of the fistula. This continual dribbling of urine prevents closure of the opening. Vitrac proposes to obviate this difficulty by keeping patients in a position of ventral decubitus. He believes that an attempt should be made to cause the closure of small vesico-vaginal fistulæ by simply the employment of ventral decubitus.

Tubercular Peritonitis.—Demons and Bégouin¹³ report a case of tubercular peritonitis with a retrourine collection of pus, treated one year before by vaginal hysterectomy, leaving the tubercular appendages of the right side untouched on account of adhesions. At the time of writing all symptoms and physical signs had disappeared, with the exception of a small, firm mass representing the right tube and ovary.

Ovarian Insufficiency.—F. Jayle¹² states that insufficient secretion by the ovaries results in irregular menstruation, either amenorrhea, dysmenorrhea, or metrorrhagia, alone or in succession, dating from the beginning of the menstrual function or later. It also causes vasomotor and nervous disturbances, such as hot flashes, feeble memory, irritability, neuras-

thenic and asthenic symptoms. The determination of the cause of ovarian insufficiency may be aided by physical examination, but is best made by test treatment with ovarian extract, which should give relief if the trouble is not due to an anatomical lesion. If the lack of secretion is of congenital origin, the genital development being incomplete, treatment should consist in general tonic measures for developing the body as a whole—diet, hydrotherapy, exercise, electricity, etc.—and in establishing the ovarian functions directly by opotherapy, or indirectly by emmenagogues, marriage, etc. Surgical treatment is useless in this class of cases. If the ovarian insufficiency is secondary to a slight ovarian lesion, opotherapy may be sufficient; if the lesion is so severe as to fail to yield to this, conservative surgical treatment is indicated, removing only diseased portions of the organs. If the lesion causing ovarian insufficiency is located in the uterus, curettage or electrical treatment may, by suppressing the metrorrhagia, regulate the ovarian function. In making a diagnosis of the cause of imperfect ovarian secretion, temporary insufficiency should be eliminated by noting the failure of opotherapy, which should be tried in all cases for several months. Physical examination and the occurrence of ovarian pain may suggest the existence of cystic or sclerotic ovaries. When resorting to surgical treatment, the ovary to be removed is always that which is the more painful, not that which is apparently the more involved, because sclerotic ovaries appear more healthy, yet are really more likely to cause pain and reflex disturbances.

Erroneous Diagnosis of Tuberculosis of the Kidney.—Krecke¹³ reports a case of nephrectomy for supposed tuberculosis. The kidney was enlarged and the urine showed albumin and tubercle bacilli. The removed organ was the seat of chronic parenchymatous nephritis, but no trace of tuberculosis could be discovered. It is stated that the cover glasses used in the bacteriological examination were imperfectly cleaned, and the bacilli found remained from a previous examination.

REFERENCES.

- ¹ Brit. Med. Jour., May 26. ² Med. Rec., June 9. ³ Ann. of Gyn. and Ped., June. ⁴ Am. Gyn. and Obst. Jour., May. ⁵ Bost. Med. and Surg. Jour., June 7. ⁶ Mont. Med. Jour., April. ⁷ Med. Rec., June 16. ⁸ Dubl. Jour. Med. Sci., June. ⁹ Med. Rec., May 26. ¹⁰ Bost. Med. and Surg. Jour. ¹¹ Author's Abstract. ¹² Rev. mens. de Gyn., Obst. et Ped. de Bordeaux, Dec. and Jan. ¹³ Presse Méd., March 17. ¹⁴ Cent. für Gyn., No. 9.

DISEASES OF CHILDREN.

Acute Leukemia in Childhood.—Thomas McCrae¹ presents a complete report of a case, the striking feature of which was the rapid course. The patient, a boy of 3 years, was admitted to the hospital almost accidentally. Beyond the presence of enlarged tonsils and adenoids, he seemed, on superficial examination, to be in ordinary good health. Had it not been for the results of blood examination no suspicion of

leukemia would have been entertained. Death occurred after an illness of four weeks. In regard to the blood condition, a relatively high proportion of the hemoglobin to the red corpuscles was seen. A high color index, while usually characteristic of pernicious anemia, occurs not infrequently in other blood conditions. There was practically no diminution in the number of red cells during the course of the disease. No nucleated red cells were found at any time, although special search was made for them. Unless the covers were drawn apart very rapidly, the majority of the lymphocytes were irregular masses without definite outline. This tendency to disintegration may be a feature of the lymphocytes in acute cases.

Aneurism of the Internal Carotid after Tonsillar Abscess; Cure by Ligation of the Common Carotid.—Wulff² reports the case of a girl, 8 years old, who had a follicular tonsillitis followed by a tonsillar abscess. While swabbing the throat, in order to free it of mucus preliminary to opening the abscess, the child gagged and a stream of bright red blood suddenly gushed from the mouth. More than half a litre of blood was lost; upon recovering from the syncope the tonsillar swelling had disappeared. Two weeks later it returned, and incision evacuated pus. About one month later a swelling was noted on the posterior pharyngeal wall, hanging down from the naso-pharyngeal cavity. It steadily increased in size, and repeated punctures withdrew only blood, bright red and arterial. The tumor pulsated; a systolic murmur was heard over it, and the pulsations ceased on compressing the common carotid artery. The thinness of the sac necessitated rapid interference, and, as digital compression was not well borne, the common carotid was tied just below its point of division. Cure was finally complete, with the intercurrent of a purulent otitis media on the left side. The aneurism was undoubtedly caused by the erosion of the vessel wall by the tonsillar abscess.

Books are Injurious to the Eyes.—F. G. Murphy³ calls attention to three ways in which the reading of books is injurious to the eyes: 1. Reading on the curved surface, the middle of the lines being from an eighth of an inch to an inch nearer the eyes than the ends of the lines. This necessitates constant effort on the part of the ciliary muscles to keep the letters in focus on the retina, while the muscles of convergence and divergence are alternately contracting and relaxing. 2. Inability of the reader to prevent light reflections from entering the eyes when reading from a curved surface. To read a book it is necessary to have the light come as much as possible from behind the reader, who holds the book slightly to one side. Then, as the angle of reflection is equal to the angle of incidence, the reader will unavoidably have the light from nearly the centre of the page reflected in the eyes. 3. The great width of the reading columns has much to do with the tiring of the ocular muscles.

Cancer of the Stomach in the Young.—In an article upon this subject William Osler and Thomas McCrae¹ state that while writers of a generation ago held that gastric cancer could be left out of consideration in the diagnosis of obscure cases in the young, later authors recognize the occurrence of a certain definite percentage at this period of life. In Welch's table of 2,038 cases the percentage was 2.8. Among 1,069 other cases there was a percentage of 2.3. So that among a total of 3,257 cases there were 2.5 per cent below the age of 30 years. The extreme rarity of gastric cancer during the first decade of life is shown by the fact that there are only 6 well-authenticated cases on record. The literature contains so many allusions to cases without a definite reference that there may be other instances. The same may be said of the cases between 10 and 20 years of age. Cancer of the stomach during the second decade is of greater clinical interest, although so rare that the authors could find reference to or reports of only 13 cases. Mathieu may be quoted assaying that cancer of the stomach below the age of 30 has generally a rapid progress in some months, and often ends suddenly by incidents more or less abrupt. He believes that cancer during this period is not latent—it is often overlooked. During the third decade cases are more numerous, the proportion being 4 per cent of the cases in the Johns Hopkins Hospital. In these cases striking features were the abruptness of the onset and the acuteness of the course.

The following symptoms may be noted: Loss of appetite was considered by Brinton to be a marked symptom in young individuals; Mathieu holds a contrary view. In the authors' cases loss of appetite occurred in some, though not in others. Pain is usually fairly severe, although in some instances this symptom is absent. Vomiting is present in the majority of cases, though this also may not occur. Tumor may be discovered in most cases; it may be concealed by an enlarged liver. Ascites was not present in any of the authors' cases. Fever was thought by Mathieu to be generally absent in the young, though it occurred in 3 of the cases under the authors' observation. Mathieu found a mean duration of three months in a series of 19 cases, though it may be extended in rare instances to eighteen months.

Diphtheria Antitoxin.—William H. Park² writes that the serum should be clean-looking and sterile and not over six months old. It may or may not have in it a small percentage of tricresol or carbolic acid. Other things being equal, the higher grades are better and more convenient than the lower ones. In the laboratories of the New York Health Department they have until recently striven for a serum which had the greatest possible amount of antitoxin in each cubic centimetre. In the future their effort will be to get the highest grades of serum which will not produce rashes; for they find that the serum extracted from the blood of different animals, and even from the blood of the same horse at different times,

varies not only in the amount of antitoxin it contains, but also in the amount of substances which cause rashes, fever, etc. A serum should therefore first be chosen because it has proved not to be irritating, and then only because of the grade. Samples of all bleedings will first be used in a few mild cases, and then only those serums which pass this test without rashes will be used. There is still some difference of opinion as to the amount of antitoxin to be administered. The custom in the Health Department is as follows: Patients seen early in whom the onset is mild, 1,000 units; those seen early in whom the onset is severe, either as shown by local signs such as swelling, hyperemia, or extent of exudate, or by constitutional symptoms, 2,000 to 4,000 units, according to severity; those seen after the disease has progressed so far that its local extent can be guessed: mild cases 1,000 to 2,000 units according to size, moderate ones 2,000 to 3,000 units; severe, showing necrosis, swollen glands, laryngeal stenosis, receive 3,000 to 4,000 units.

Diphtheria Antitoxic Serum, Case of Peculiar Disease following the Use of.—V. Szontagh⁶ reports the case of a girl 12 years old to whom he gave 3,000 antitoxin units at one dose on the second day of an attack of diphtheria. During the next forty-eight hours the fever disappeared and the throat lesions improved very much. On the third day the child had chills, temperature of 39.9° to 36.2° C., was restless, and the cervical glands grew larger. The fever continued, and an urticaria appeared nine days after the serum injection had been given, and lasted two days. Severe pains in the knee joints were complained of, and spread over the whole body, so that the least touch caused exquisite pain. The child lay on her back, unable to move; attempts to lift the lower extremities caused a tremor simulating that of spastic spinal paralysis; there was profuse sweating, especially of the lower limbs. Bromide of potassium had the best effect upon the restlessness and sleeplessness. Improvement began seventeen days after the joint pains had begun, and two months later the child was as well as ever. The severe complication must be explained on the ground of personal idiosyncrasy, and is by no means a contraindication to the general use of antitoxin in diphtheria.

Diphtherial Stomatitis.—E. F. Trevelyan⁷ cites two cases. By diphtherial stomatitis he means a stomatitis produced by the diphtheria bacillus, associated or not with other microbes. The term does not include cases in which the membrane or exudation is present on the uvula and adjacent soft palate—for this localization is included under faucial diphtheria and is not uncommon—but is restricted to cases in which the characteristic lesion is situated on the inner side of the lips or cheeks, the floor of the mouth, tongue, or hard palate. It may be either primary or secondary, according as the membrane or exudation appears first in these situations or follows upon a faucial diphtheria. A genuine primary diphtherial stomatitis is very

rare, but cases have been reported by the most competent observers. Secondary diphtherial stomatitis is also rare, but is commoner than the primary form. Some authors say that it mostly begins in fissures and ulcers already present in the mouth. The presence of the diphtheric lesion in the mouth as well as on the fauces is usually taken as indicating a severe attack of the disease.

There can be no doubt that a membranous stomatitis may be due to several different microbes, including the diphtheria bacillus, and that it may be impossible to distinguish a genuine diphtherial stomatitis from other forms (conveniently classed at present as diphtheroid stomatitis) by a mere inspection of the mouth or by the presence or absence of general symptoms. Hence the importance of making a bacteriological examination in cases of membranous stomatitis, in order to recognize the actual contagion of the disease and to isolate the cases of genuine diphtherial stomatitis.

Direct Examination of the Larynx in Children.—Max Thorne^{*} advocates the direct examination of the larynx—that is, without the aid of the laryngeal mirror. This method of forced examination is not only feasible, but also practical, and we may often gain information which we could not obtain by the ordinary method of laryngoscopy. The direct examination by Kirstein's method affords in all cases an excellent view of the lower pharynx, of the epiglottis, and part of the vestibule. In many cases we can also see the arytenoid cartilages. To see more—that is, the ventricular bands—the writer found very difficult and sometimes impossible.

Functional and Organic Heart Murmurs in Infancy and Childhood.—Abraham Jacobi^{*} writes that during the last few years many contributions have been made to the subject of the existence or non-existence of functional murmurs in the infant. Their existence during the first three years of life has been absolutely denied by authors of eminence. The persistent discussion of these statements has, however, brought out a few instances of a murmur in the very young that may well be taken as functional. Neither functional nor organic murmurs should be mistaken for extracardial murmurs—an error which the author has seen committed. Extracardial murmurs in children, mostly systolic, are very infrequent in infants below 2 years, because at that time the heart is larger in proportion and less covered by the lungs. When these grow, however, and in the presence of a tumor or of adhesions between the pleura and the pericardium, the murmur appears, soft and grating; is strong on deep inspiration; disappears when there is no breathing; and is less audible in a recumbent posture. If murmurs mean organic valvular disease in most cases, the latter does not necessitate the presence of a murmur. Mitral stenosis need have no murmurs at all. Ulcerative endocarditis may also not exhibit any murmur, proofs of this statement having been found in autopsies. Most murmurs mean organic lesions either in the valves or myocardium.

In that respect all ages are alike. But there are possibilities in the infant which modify the explanation of the usual observations, and there are conditions in which the diagnosis is very difficult. For instance, besides the frequent mitral systolic murmurs that result from infectious diseases and rheumatism, there are those which originate in contraction or more or less obliteration of the mitral orifice, or adhesion of the valve. These conditions are not always complicated. In persistence of the ductus arteriosus Botalli there is a loud systolic murmur over the sternal end of the second left intercostal space. In congenital stenosis of the pulmonary artery there is in the sternal part of the second left intercostal space a systolic murmur which is not transmitted into the carotid except when there is a complication with defects of the ventricular septum. Organic murmurs, when present, are not always audible, and may not be heard at all when the heart beats increase in number.

"Growing Pains" as a Symptom of Rheumatism.—E. M. Brockbank¹⁰ calls attention to this important and well-known, though often neglected, indication of an attack of rheumatism in children. The term "growing pain" is usually applied, especially outside the profession, to certain vague aches and pains which are supposed to assail the rapidly-growing anemic boy or girl before or about the age of puberty. But there is no doubt that these growing pains are often, if not always, of rheumatic origin, and the physician inquiring into the cause of a diseased heart, especially of mitral stenosis, should not give up the quest for rheumatism without making special mention of them in his investigations, though he has asked already about previous attacks of rheumatism, chorea, or even "pains in the joints." The younger the subject of rheumatism, the less are the joints affected and the more likely is endocarditis to attack the valves of the heart; and therefore any mention of pains in the limbs of a child, however slight and unimportant they may appear to the parents, should at once excite the suspicion of the medical man and direct his attention to the heart. The recognition of endocarditis at such an early stage of life, followed by prophylactic treatment against the crippling of the valves, would diminish the severity, if not ward off altogether the development, of the insidious inflammation which leads to the condition of the heart found in later life.

Infection through the Tonsils.—Frederick A. Packard¹¹ has an exhaustive article upon this subject, especially in connection with acute articular rheumatism. The arguments which he has endeavored to use may be summed up as follows: The tonsils are active and useful organs, whose function it is to offer a barrier to the entrance of organisms into the deeper tissues at a point which by its location and construction is very open to infection. They act in this respect as do other lymphadenoid tissues in the body, as is best exemplified by the lymphatic glands. During the course of or following tonsillitis

tis we may have occurring most of the important complications of typical acute articular rheumatism. The author believes that acute articular rheumatism is an infectious disease, dependent possibly upon no one organism, but upon a variety of bacteria. The phenomena of rheumatism can be accounted for by toxin absorption, and the toxin causing rheumatism may be produced by an attenuated micro-organism. It is possible that the frequent entrance of the micro-organism by way of the throat may explain the fact that we have acute articular rheumatism developing after an invasion of the throat rather than the ordinary septicemia or pyemia, for the reason that just beyond the port of entry there is situated a collection of lymphadenoid tissue capable of restraining the growth and virulence of micro-organisms attacking the membrane which it protects. The terms rheumatic pleurisy, rheumatic purpura, rheumatic erythema, and rheumatic sore throat should be used with less freedom. It would be more correct to look upon them as the result of infection, whether accompanied or not by articular phenomena, than as latent, aborted, or incomplete forms of a condition produced by an unknown, mysterious, and intangible rheumatic poison.

Milk-Poisoning.—T. Zammit¹² gives an account of milk-poisoning in Malta, where whole families are suddenly attacked every year with severe gastro-intestinal disturbances, so severe that there is occasionally a fatal issue. These attacks occur without any reference to the season and when no variation in the general health of the population has even been observed. Having been summoned to a place where an outbreak had just occurred, the author found seventeen persons, residing in five different houses, suffering from the attack. The symptoms were, with varying intensity, severe diarrhea and vomiting, acute pains in the stomach and bowels, shrunk-en face, cramps in the extremities and in the abdomen, the pulse weak and irregular, the skin cold and clammy. The attack followed in all cases three hours after the ingestion of milk bought in the morning. Several persons in one of the families who had carefully boiled the milk before use did not suffer in the least. The milk was supplied from one can. Other families supplied by the same milkman, but directly from the goats, did not complain of any ill effect. Inspection showed everything all right but the milkman's cans. They had been already washed and dried, but a smell of sour milk was distinct in them all. Rinsings of the cans, and a specimen of the milk obtained from one of the poisoned families, were subjected to bacteriological examination. In the tubes the milk was found changed, the frothy whey smelling distinctly of butyric acid, and it contained numerous bacilli corresponding in shape to the bacillus of Klein. Two guinea-pigs were injected subcutaneously with the whey and died with similar pathological alterations, one after several hours and one after two days. They died with extensive gaseous tumors in the groin and chest, due to gangrene which dissolved the muscular

tissue. The offensive sanguineous fluid contained the bacillus in pure culture and in enormous quantities.

Neuropathic Children, Blood Pressure in.—P. Heim¹³ examined the blood pressure in 25 normal and 58 neuropathic children ranging from 3 to 14 years of age. In the case of the neuropathic children the blood pressure was higher than normal, due to the greater psychic irritability. The height of the pressure has no relation to the severity of the disease, nor is it possible to differentiate the various forms of neuroses by this means. Abnormally high pressure was also found in three cases of chronic nephritis and in one of acute hemorrhagic nephritis following scarlet fever.

Newly-Born, Position of, in Lying-in Hospitals and Obstetric Clinics.—Behrend⁶ thinks it desirable to entrust the care of newly-born infants in hospitals to a pediatrician, in order that the normal and pathological conditions of these infants may be better studied. Lying-in hospitals ought to instruct the mothers by means of suitable, popular literature and charts. The babies should be dressed in hospital garments, and the clothes brought in used only in exceptional cases and after sterilization. The criterion of a proper treatment for the umbilicus is the prevention of contact with infectious material. This prevention of umbilical infection is the chief problem of the hospital as regards the child. The principles of proper treatment of the navel are: A separate nurse should undertake the care of the infant; the cord is to be compressed at the point of ligature, then tied, leaving a stump one to two centimetres long, and the blood expressed. The bath is then to be given so quickly that the child does not become cold; after the bath the cord is to be carefully cleansed with alcoholic sublimate solution and only sterile dressings applied; cotton or gauze may be used and the cord fastened to the left side of the abdomen by means of the child's binder. This dressing need not be changed until the cord falls off, unless it becomes soiled; the stump should be washed with bichloride if the dressing is removed. Bathing must be prohibited until the cord is off, and the daily weighings are also impossible until then. The mouths of newly-born infants should not be washed, and washing of the mother's nipples limited in order to prevent soor. There should be an isolated division for feeble, premature infants and for sick newly-born babies, where they can be taken with their mothers.

Obstruction of the Intestine.—F. C. Wallis¹⁴ reports a case of enterectomy by end-to-end suture in a boy aged 7. The writer states that there are three methods available in the acute stage of intestinal obstruction: 1. To remedy the obstruction and return the intestine. This method is only occasionally available, because in the first place the case is not, as a rule, seen early enough; and, again, the apparent well-being of the bowel is often deceptive, as the sequel unfortunately too often shows. 2. Resect the bowel. This can be done in only a few cases at the time of the relief operation. The main

reason against it is the time which it takes. The condition of the patient and the rapidity with which the operator can work are the main points to be taken into consideration. 3. To remedy the obstruction by opening the bowel. This method is probably the safest in most cases of acute intestinal obstruction, when there is any doubt as to the condition of the gut, and when the patient's condition is such that any prolonged operation would greatly add to the danger of life. The operation, whether the obstruction has been found or not, takes only a few minutes; the relief is complete, and the question of intestinal paralysis need not be considered. Finally, if for any reason it is not thought desirable to give a general anesthetic, the whole operation can be performed under eucaïne.

Otitis Media in Young Children.—George L. Richards¹⁵ syringes the ear thoroughly with warm sterile water or with a solution of 1:5000 bichloride of mercury until all débris has been removed. If there is much destruction of the tympanum he applies hydrogen peroxide on a cotton pledget as long as there is any exudation of gas, and, after drying the parts, applies a saturated solution of boric acid in from forty to ninety per cent of alcohol, the percentage depending on the age of the child and its ability to bear the pain of the alcohol. He then dusts the whole surface with powdered boric acid or some similarly acting powder. If the process is more acute he cleanses the opening in the drum membrane so as to insure perfect drainage. If the opening is not large enough to allow the exit of the discharge, a free incision is made at the posterior inferior quadrant of the drum membrane. He then instructs the mother how to insert cotton pledgets in the external canal, which are to be frequently changed. Boric acid is blown in through a bit of glass or rubber tubing when the cotton is changed.

Poliomyelitis Anterior, Bacteriological Findings in Lumbar Puncture in.—Engel¹⁶ made a lumbar puncture in a 5-year-old child six days after the first symptoms of anterior poliomyelitis appeared. The staphylococcus pyogenes albus was found, and was not pathogenic to a rabbit. Whether the bacteria were really an etiological factor in the disease, or whether they were a contamination from the skin, is not proved by a single case.

Postdiphtheritic Stenosis.—John Rogers¹⁷ writes that the commonest cause of postdiphtheritic stenosis necessitating long-continued intubation is a hypertrophy of the subglottic tissues accompanied by a chronic inflammation. The intubation is in no way the cause of this, as it occurs irrespective of the operation. Less often there is an ulceration, and subsequently a formation of a greater or less amount of cicatricial tissue and contraction. This likewise is not the result of the intubation, except in rare and practically unavoidable instances. But it certainly may follow a tracheotomy, and in a larynx already chronically stenosed it makes the condition worse, but not necessarily more difficult to cure. Exuberant granulations *within* the larynx apparently do not occur with intubation, no

matter how prolonged. As to the frequency of the occurrence of this condition accompanying intubation, Dr. Dillon Brown stated that he had encountered it once in 75 or 100 cases. In an article written by Galatti, it appears that Ranke reported 1 case in many hundreds, Hubner 1 case in 250, and Bokai 2 in 800. Dr. George McNaughton had only a few cases in many hundreds. The New York Foundling Hospital had 6 cases in 500. In the Willard Parker Hospital 8 cases of chronic stenosis occurred in 900 intubations. Treatment by surgical operation, which has generally implied opening the larynx by median division of the thyroid and cricoid cartilages and excision of the obstructing tissues, has been noticeably unsuccessful. Skin-grafting the resulting raw surface, or the insertion of some form of tracheal canula to keep up a more or less constant dilatation and at the same time allow respiration through the fistula, have all failed. More or less troublesome cases will recover after two or three or four weeks with intubation as it is ordinarily practised, or with the O'Dwyer "special" tube which has the retaining swell transferred from the middle to the lower end, and is so made as to relieve the supposedly irritated and swollen tissues of all the pressure possible. Some patients, however, do not improve even with very careful intubation, for some reason difficult to explain. In such cases the continued uninterrupted use of as large a tube as can be crowded into the larynx is an almost infallible cure. The tube should be changed for a larger one as soon as it becomes loose. When auto-extubation occurs repeatedly and is not checked by increasing the size of the tube, tracheotomy is indicated, as several weeks or months may elapse before intubation can safely be resumed. Then if the larynx has undergone cicatricial contraction—and it is more likely to occur the nearer the wound is to the larynx—this contraction should be dilated with urethral sounds passed from below up, until a tube can be introduced as large as the larynx will bear without rupturing the cricoid, or, if this has been divided in the tracheotomy, without producing a slough. It may be impossible to fully dilate a cicatrix at one sitting, and in that case the tube should be increased in size as soon as the tissue has yielded, or in about ten days or two weeks. This tube, then, should not be disturbed for five or six weeks. More time may be demanded in an occasional case. The hard-rubber tube should be used.

Practice and Precept in Children's Diseases.—T. C. Railton¹⁸ says that the total number of deaths in Manchester (England) in 1898 from all causes and at all ages amounted to 11,493, and of these no less than 5,003 occurred in children under 5 years of age and 3,425 in infants under 1 year. Manchester does not differ in any material degree, so far as regards its relative mortality in children, from any other large city. The author believes that ignorance plays the fundamental part in the causation of this large mortality. Diarrhea caused in the one year 1,000 deaths practically under the age of 2 years. Neither dirt nor overcrowding has any necessary connection

with the production of this disease, although they are powerful predisposing causes; the essential condition of diarrhea is the infection of food by microbes, probably specific—an infection which is particularly apt to take place in milk and hence to affect bottle-fed infants. The Jewish children in Manchester scarcely ever have diarrhea or rickets, because it is the invariable custom of the Jewish mother to suckle her young when she can. The breast milk is free from microbes; it is also such an assimilable food that children brought up on it scarcely ever have rickets. Mothers should be educated as to the danger of not nursing their children when they are able to do so. Indigestible food is apt to cause death from convulsions, atrophy, enteritis; and even the process of dentition, to which so much importance is ascribed by the laity, is probably fatal only when it complicates some other disease, such as gastro-intestinal troubles. The author urges that medical men should take a more active and public part in the endeavor to diminish the mortality among children by educating the public in regard to infant feeding, etc., countenancing no food except modified or humanized milk which has been sterilized and pasteurized in the case of bottle-fed infants, assisting in the extension and management of crèches, giving public lectures upon elementary laws of physiology, etc. Over one hundred infants under 1 year were found dead in bed, 61 of them suffocated. The mothers want teaching.

Rachitic Children, on the Occurrence of Peculiar Crystals in the Bones of, treated with Suprarenal Substance.—Stoeltzner and Salge¹⁹ examined microscopically the only cases (three in number) of rachitis which have come to autopsy after treatment with suprarenal extract. In sections of the bones crystals were found which had never been seen before in rachitic bones. The crystals were comparatively insoluble in alcohol, but soluble in water, had an affinity for silver solutions, and crystallized out from a watery extract of the bone in forms which were morphologically indistinguishable from spermin crystals.

Rachitis.—John Lovett Morse,²⁰ in the course of some remarks upon this subject, says that rickets is a chronic disease of nutrition, in which all the tissues and nearly all the organs of the body are involved. Rachitic children are often fat and heavy, however, the normal relation between fat and muscle being altered at the expense of the latter, which are soft and flabby. In fact, atrophic babies are almost never rachitic. While rachitis may be strongly suspected, it cannot be diagnosed with certainty unless some of the bony changes are present. Some of the earliest symptoms which should suggest the possibility of the disease and induce a search for the characteristic bony changes are fretfulness, languor, restlessness at night, kicking off the bedclothes, sweating of the head, rolling of the head, boring of the head into the pillow, and night-terrors. Gastro-enteric disturbances, if persistent, are always suggestive. Delayed dentition and delayed develop-

ment of any sort are more often due to rickets than to any other cause. The best treatment for deformities is to prevent them from developing. The child should not be encouraged to sit up, stand, or walk while the bones are soft. He should rather be discouraged. Postural treatment will do something for the deformities of the spine, and manipulation for those of the extremities. Further treatment must be mechanical or operative. Mechanical treatment is of little use after the child is 2 or 2½ years old. Many slight deformities, however, disappear with the growth in the course of years.

Rachitis, Prophylaxis of.—Poltzer²¹ considers that fresh air and careful feeding, preferably by the mother or wet-nurse, are the prophylactic factors which prevent rachitis. The earliest symptoms of rachitis are craniotabes, delayed closing of the anterior fontanelle, and enlargement of the epiphyses of the ribs. By recognizing the disease early and treating it by means of phosphorus and hygienic measures, it will become possible to prevent rickets from going beyond the early stage.

Scarlet Fever.—W. K. Jaques²² thinks that in the attempt to produce artificial immunity from this disease the nature of the germ should be kept in mind. In the writer's laboratory experience, and from his clinical observation, he is of opinion that the germ is an irritating, fever-producing one, and not a toxic or toxin-producing germ, the pathologic conditions being caused by the multiplication of the germs themselves and their irritating presence, rather than from any toxin which they produce. In this it differs from the Klebs-Loeffer bacillus, which is a toxin-producing germ and not a fever or irritating one. Bacteriologists say that the difficulty in getting an antitoxin for typhoid fever is because they are unable to obtain a toxin of sufficient strength to stimulate the cells of the animal to produce an antitoxin. The same difficulty will stand in the way of producing an immunizing serum for scarlet fever.

Scarlet Fever, the Prevention of.—Floyd Crandall²³ writes that the isolation of children known to have been exposed to scarlet fever may not be strictly necessary, but close observation is an important measure of prevention. The disease is not contagious during the period of incubation, and it is doubtful, indeed, whether it is contagious before the appearance of the eruption. In measles, on the other hand, the period of contagion begins two or three days before the appearance of the eruption. The author believes, however, that it is wiser to isolate children who have been exposed, as the period of incubation in this disease is only two to four days according to his experience. At any rate, there is no doubt as to the advisability of isolating the patient after the eruption has appeared. The most infectious period is during the height of the eruption. Then there is a decline in the infectious power, which is again followed by a period in which that power is renewed—during the period of desquamation. The patient is dangerous to others as long as the slightest desquamation continues on any portion of the skin. The duration

of the period is variable, the conventional forty days being only approximate. The question of secondary and tertiary desquamations is interesting from the point of prophylaxis. The scales from these desquamations are certainly less infectious than those of the primary desquamations. Some believe they are not capable of conveying the disease; but authentic evidence tends to prove this belief erroneous. Purulent discharges also contain the infectious principle of scarlet fever; accordingly no child suffering from otitis, chronic pharyngitis, purulent coryza, suppurating glands, or a purulent discharge of any kind following an attack of scarlet fever, should be allowed to mingle with others. At present the means by which the New York schools are instrumental in disseminating scarlet fever is through the clothing of children who may have come from families in which the disease exists. This is possible, as there are many unreported and concealed cases. It cannot be denied that medical men through carelessness have sometimes been instrumental in carrying scarlet fever, as no other disease is so frequently transmitted through the agency of clothing; and the author feels justified in asserting that the practitioner should never visit a case without wearing a gown, which can be made very cheaply of cotton cloth. A cap may also be worn, and the hands and face should always be disinfected after each visit to a scarlet-fever patient. The child should be placed in a light front room whenever possible, and all hangings, upholstered furniture, and carpets removed. The unused doors should be sealed with strips of paper, and the remaining door kept closed. The hanging of dampened sheets before the doors is a measure of some practical value, as they prevent currents of air and act as constant reminders of the necessity of care. General inunction of the body is a most effective measure and should be continued until desquamation has ceased. Carbolized vaselin should not be used over large surfaces of skin, as absorption might occur.

Surgical Anatomy of Congenital Dislocation of the Hip Joint.—From the examination by Edward H. Nichols and Edward H. Bradford "of some specimens of congenital dislocation of the hip, it appears that: (1) As a whole, the anatomical conditions vary within considerable limits in individual cases. (2) Certain anatomical conditions, particularly the peculiarities of the bones, are tolerably constant. (3) The acetabulum is triangular, with its apex directed upward, shallow, faces more or less outward, and often is insufficient to retain the head of the femur in place, even if reduction is accomplished. (4) A new articular surface to receive the dislocated head of the femur sometimes is present upon the surface of the ilium. (5) The head of the femur is small, its articular area is diminished and irregular in shape. (6) The neck of the femur generally is short and makes with the shaft an angle approximating a right angle. (7) The angle of femoral torsion is very much increased by adoptive rotations of the femur upon its vertical axis, so that the knee is brought directly forward.

Hence, if reduction is accomplished, the knees will tend to face inward and a secondary osteotomy may be required. (8) Sometimes the shaft of the femur has an outward convexity in the upper third. (9) The capsular ligament is always irregular, but the irregularity is variable. The capsule may be hourglass-shaped. Then the upper dilatation is attached to the external surface of the ilium and encloses the dislocated head of the femur and is covered by the gluteal muscles. The lower dilatation encloses the original acetabulum. Between the two dilatations is a constricted neck, which may be too small to permit reduction of the head; or the capsule may not be attached to the rim of the acetabulum, but may form a small globular sac about the head of the femur, attached to the external surface of the ilium; or from such a globular sac a diverticulum, lined with synovial membrane, may extend into the apex of the acetabulum. The capsular ligament may be too short to allow the head to remain in the acetabulum, even if reduction is possible. (10) The ligamentum teres is absent in the cases examined. (11) The cotyloid ligament is small and thin and shows only at the apex of the acetabulum, or may be entirely wanting. (12) The capsular ligament is thickened throughout and may show an especial thickening just above the apex of the acetabulum, so as to form a retaining lower rim for the false acetabulum, and form an obstacle to reduction of the head. (13) Only the adductor muscles offer marked resistance to reduction of the deformity.

The obstacles to the reduction of the deformity are: (1) The peculiar attachment of the capsular ligament, which causes a shortening of ligamentous bands at various points, chiefly laterally and below. (2) Constriction of the middle of the capsule, so that it may be impossible to draw the head of the bone through the constriction. (3) Thickening of the capsule just above the apex of the acetabulum. (4) Adhesions between capsule and head of the femur. (5) Contraction of the adductor muscles. (6) An increase of femoral tension, so that when the head of the femur is placed in the normal acetabulum the knee looks outward.

The obstacles to retention of the head of the femur after complete reduction are: (1) A flattened or insufficient acetabulum, placed too obliquely; (2) an insufficient head; (3) an extremely short neck of the femur; (4) obliteration of the cavity of the acetabulum by a mass of dense fibrous tissue.

Swelling of the Eyelids with Intermittent Albuminuria in Children —Theodore Fisher ' reports a number of cases, in 3 of which there was swelling of the eyelids associated with the occasional presence of albumin in the urine; in 2 of the cases closely resembling the first 3 there was occasional swelling of the eyelids associated with lethargy, but repeated examination of the urine failed to show any albumin; in another case albumin was always present apparently, yet the general condition of the child did not seem to be worse than that of most of the preceding. In popular language, all of the

children would be described as weakly or delicate, but they were not distinctly ill. It is probable that there is a form of nephritis that commences insidiously and is seen eventually on the postmortem table as the variety of the small white kidney to which Dr. Rose Bradford has called attention. This kidney, when it occurs, is seen most frequently in young adults. Usually there is nothing in the history to indicate when the disease commenced, but it is reasonable to suppose that some cases have existed since childhood. This form of nephritis, however, is too rare to be a sequel to the majority of cases of intermittent albuminuria in children. Until it has been proved that the prognosis in cases of intermittent albuminuria is serious, the author chooses to look upon its presence, with or without swelling of the eyelids, as evidence of some vasomotor instability or defective metabolism.

The Neuromuscular Elements in Hip-joint Disease.—

In the course of an exhaustive article upon this subject, Newton M. Shaffer²⁵ dwells upon the importance of continuing the protective treatment of a joint affected with tuberculous disease during the stage of apparent convalescence. It is during this stage that the claims of the patient and his friends assert themselves. They demand use and exercise for the joint, for they see only the wasted limb, the shortened member, the weak articulation, and the disability. The long absence of apparently important symptoms, the prolonged treatment, the continued and enforced disuse of the affected joint and leg, have but one meaning to them and sometimes to the physician. The question which we have to meet is: Is the joint really well but weak and vulnerable, or is the disease latent, ready to appear if the joint is removed from local mechanical protection? The author has studied the neuromuscular signs and symptoms of chronic joint disease from a clinical and a pathological standpoint, and is convinced that the existence of a true tetanoid spasm indicates that the affected joint is something more than simply weak and vulnerable. It has been demonstrated that the long-continued absence of pain, the relief or correction of the deformity, and the existence of a considerable improvement in the passive motions of the joint do not necessarily indicate that the stage of true convalescence has been reached. The tetanoid spasm in joint disease is the only safe and reliable sign in diagnosis and treatment, and enables us on many occasions to make a prognosis. Its presence enables us to detect the disease in its first apparent stage, and the modification or persistence of this peculiar telltale neural sign is our principal guide in treatment. We must be prepared, however, to recognize the difference between the true tetanoid reflex spasm and those conditions which simulate it. A joint may be sensitive and the muscles rebel against motion, but this is not the tetanoid spasm of tuberculous joint disease.

The Technique of Lumbar Puncture.—Lewis A. Conner²⁶ writes that in order that the needle shall find ready entrance to

the subarachnoid space, any of the lumbar spaces or the lumbo-sacral space may be selected. Possible injury to the cord may be avoided by entering at some point below the third lumbar vertebra, especially in children. To obtain the fluid richest in sediment the lumbo-sacral space should be tapped. Children should always be tapped with the patient in the upright position, but in the case of adults, especially with those who are delirious and comatose or who are greatly prostrated, the difficulties of operating in the upright position are too great. Whatever position is decided upon, the essential point is to secure the greatest possible degree of ventral flexion of the spine, in order that the lumbar laminæ may be separated as widely as possible. A number of serious accidents or sequelæ have been reported, yet they are certainly of very rare occurrence, and have been associated in almost every case with the removal of a very large quantity of the fluid. For purposes of diagnosis 10 to 15 cubic centimetres are usually ample. If for therapeutic purposes, it may be desirable to remove several times that amount. Headache, faintness, or a change in the character of the pulse are signs that the flow should be stopped.

Tinea Favosa.—Charles A. Kinch² calls attention to the fact that this disease is spread largely by means of domestic animals, especially the cat. Rodents also perform no inconsiderable part in the transmission. It is believed by dermatologists that the number of cases of favus in this country is increasing. In the treatment of favus no better procedure has been found than that advocated by Bazin forty-five years ago—persistent and repeated epilation and brisk rubbing into the diseased surface of a watery solution of corrosive sublimate (0.005 to 0.008). In the intervals some parasiticide ointment may be applied, or, if there is much itching, an antipruritic. Favus in the human subject is often associated with adenopathy and an impairment of the general health. The cure of favus is perfectly feasible, but when there is chronic invasion of the scalp it is useless to undertake the case unless the patient will promise to remain under observation a full year, as relapses are apt to occur.

REFERENCES.

- ¹ Johns Hopkins Hosp. Bull., May. ² Münchener med. Wochens., vol. xlviii., No. 20. ³ N. Y. Med. Jour., Apr. 14. ⁴ N. Y. Med. Jour., Apr. 21. ⁵ Jour. Am. Med. Assoc., Apr. 14. ⁶ Arch. f. Kinderhk., vol. xxviii., Nos. 5 and 6. ⁷ Brit. Med. Jour., Apr. 14. ⁸ N. Y. Med. Jour., Mar. 10. ⁹ Med. News, May 12. ¹⁰ Brit. Med. Jour., Apr. 28. ¹¹ Phila. Med. Jour., Apr. 21 and 28. ¹² Brit. Med. Jour., May 12. ¹³ Deutsche med. Wochens., vol. xxvi., No. 20. ¹⁴ Brit. Med. Jour., Apr. 21. ¹⁵ Med. News, May 19. ¹⁶ Deutsch. med. Wochens., vol. xxxi., No. 16. ¹⁷ Annals of Surg., May. ¹⁸ Med. Chronicle, Apr. ¹⁹ Berlin. klin. Wochens., vol. xxxvii., No. 18. ²⁰ Phila. Med. Jour., May 26. ²¹ Wiener med. Presse, vol. xli., No. 15. ²² Jour. Am. Med. Assoc., May 26. ²³ Med. News, June 2. ²⁴ Am. Jour. Med. Sci., June. ²⁵ N. Y. Med. Jour., Apr. 14 and 21. ²⁶ N. Y. Med. Jour., May 12. ²⁷ N. Y. Med. Jour., Mar. 17.

THE AMERICAN
JOURNAL OF OBSTETRICS
AND
DISEASES OF WOMEN AND CHILDREN.

VOL. XLII.

AUGUST, 1900.

No. 2.

ORIGINAL COMMUNICATIONS.

THE PATHOLOGY OF TUBAL PREGNANCY:

A SUMMARY OF THE STUDY OF FORTY CASES.¹

BY

MAXIMILIAN HERZOG, M.D.,

Professor of Pathology in the Chicago Policlinic ; Pathologist to the German Hospital and
the Maurice Porter Hospital for Children, Chicago.

(With sixteen illustrations.)

THE most frequent variety of ectopic gestation is tubal pregnancy. We are dealing with it when an impregnated ovum becomes implanted in the canal of the Fallopian tube, including, of course, the fimbriated extremity, or in anomalous structures accessory to the oviducts, such as accessory fimbriated extremities, accessory tubes, etc. It is very probable that in the human being, as in lower orders in which this observation has been actually made, the fertilization of the ovum by the spermatozoa occurs in the outer half or outer third of the tube. Normally an ovum fertilized in the tube will in a few days travel into the uterine cavity and will there become implanted

¹ A paper read before the Section on Pathology of the Atlantic City meeting of the American Medical Association, June 7, 1900.

for further development. The question arises, what cause or causes are responsible for an impregnated ovum remaining and becoming implanted in the tube instead of passing into the uterus? Certain alleged causes formerly frequently cited as responsible for tubal pregnancy, such as inflammatory diseases of the uterus and tubes, must be absolutely discarded. We know now that these very conditions, accused of being the cause of tubal pregnancy, make a woman sterile for the time being and therefore exclude tubal as well as normal uterine pregnancy.

The etiology of tubal pregnancy is certainly not a uniform one for all cases. It appears to me that in a respectable percentage of cases congenital anomalies of the tubes due to anomalies in early embryonic development of the Müllerian ducts are responsible for the occurrence of tubal pregnancy. I have previously, conjointly with Dr. F. Henrotin,¹ reported cases of tubal pregnancies due to tubal anomalies.

Another factor which I consider as important in the production of tubal gestation is an unduly marked participation of the tubal mucosa in menstruation. With others I hold that the tubal mucosa takes part to a certain extent in menstruation. Normally the menstrual changes of the tubal mucosa are insignificant compared with those of the uterine mucosa. Occasionally, however, the tubal mucosa shows intense menstrual changes, which may be so pronounced as to lead to the formation of a hematosalpinx. I have once seen such a case in a girl 14 years old, in whom a hematosalpinx was formed in this manner during her second menstruation. We can hardly doubt that the menstrual changes of the uterine mucosa prepare the latter for the reception of an impregnated ovum, which, as appears most probable from the latest contributions upon the subject, eats or corrodes its way into the substance of the uterine mucosa by the aid of a phagocytic trophoblast. Whenever the tubal mucous membrane undergoes extensive menstrual changes it becomes a soil into which an impregnated ovum can easily implant itself. It appears, therefore, very probable that marked menstrual changes in the tubal mucosa, when they do occur—and they occasionally are present—become the cause of an ectopic implantation of a fertilized

¹ Henrotin and Herzog: "Anomalies du canal de Müller, comme cause de grossesse ectopique." *Revue de Chir. abdom.*, 1898.

Henrotin and Herzog: "Very Early Rupture in Ectopic Pregnancy in a Diverticulum." *N. Y. Med. Jour.*, Oct. 21, 1899.

ovum. As far as our exact knowledge goes to-day, we must, however, confess that we are unable in most cases of tubal pregnancy to definitely give the exact cause or causes of this event, often so very grave in its consequences.

That our knowledge as to the etiology of most cases of ectopic gestation is yet so very deficient lies in the very circumstances surrounding this occurrence. And, besides, we must not forget that when we obtain specimens for examination post operationem or post mortem, hemorrhages and secondary changes have so mutilated the parts that exact anatomical and histological studies become utterly impossible. It is in consequence of these difficulties that we still find so many contradictory views as to the histology of tubal pregnancy, though the subject has been extensively studied, and though we possess many excellent, painstaking researches, of which I here only wish to mention those of Webster.

Among a larger number of cases of ectopic gestation, only a fraction can be relied upon to furnish valuable microscopic material, and even this can only be properly interpreted by one who has been a faithful, patient student of the histogenesis of the normal uterine placenta, a subject itself offering considerable difficulties. These, of course, become greatly augmented when we deal with an ectopic implantation of the ovum.

The following summary of my observations on the histology of tubal pregnancy is drawn from a study of 40 cases which were examined during the last four years. For most of the material I am indebted to Dr. Fernand Henrotin. The other cases studied occurred in the practice of Drs. M. L. Harris, I. C. Manierre, A. Goldspohn, C. S. Bacon, Carl Beck, Henry Banga, N. Kerr, Gustav Schirmer, and Weller Van Hook. The youngest case of ectopic gestation which I have had a chance to study was of two to three weeks' duration. Most cases were of four to eight weeks' duration. Neither I nor any previous worker in this field has ever had the good fortune to observe the very first stages of tubal placentogenesis.

I find that the earliest stages of the placenta fetalis in tubal pregnancy which I have been able to obtain and study do not at all differ from the same stages of the placenta fetalis in uterine gestation. It appears, therefore, quite reasonable to assume that the still earlier unknown stages in tubal placentation are identical with the same stages in uterine placentogenesis. This view may now be held with safety since we have recently had by Van Heukelom and by Peters some

very important contributions about early uterine placentation, which necessarily do away with some very peculiar theories of how and under what circumstances villi could become attached to the tubal mucosa. We know now from the observations of Van Heukelom and Peters that the human ovum, like that of some lower mammals, soon after fecundation is surrounded by a layer of solid ectoblasts, called trophoblast. The trophoblast, as it appears, has phagocytic properties and enables the ovum to corrode or eat its way into the uterine mucosa, which at this early time has already assumed the character of a decidua. If this is the normal *modus operandi in utero*, as the observations of Peters, particularly, very strongly point out, it is easy to understand how an impregnated ovum may implant itself into the tubal mucosa. The mode of implantation would be exactly the same as in the uterus, because it depends chiefly, if not exclusively, upon the structures of the fertilized ovum. An implantation of a fertilized ovum with its phagocytic trophoblast in the tubal mucosa would be the easier the more the tubal mucosa took part in the menstrual changes, because these undoubtedly prepare the mucosa for the implantation of the ovum.

A few words may here be said about the menstrual changes as I have observed them several times in the uterine mucosa and twice in the tubal mucosa. These observations were made on material obtained per operationem from the living. This is the only proper material, because postmortem material is eminently unfit for these studies and has given rise to absolutely erroneous views as to the menstrual changes of the uterine mucosa. My observations on this subject confirm those of Mandl and others, who claim that the uterine mucosa is not, as was formerly thought, shed in menstruation. What we find is the following: The capillaries of the intertubular connective tissue are enormously dilated and densely filled with red blood corpuscles. Many of the latter are also found free, outside of the capillaries, between the connective-tissue cells of the interglandular spaces. The whole mucosa is edematous and the connective-tissue cells are pushed apart by the edematous and hemorrhagic infiltration. Some of the connective-tissue cells, which in the intermenstrual periods are normally all of the type of small lymphoid cells, are enlarged, oval or fusiform. They assume a type found in certain forms of endometritis interstitialis and approach the type of decidual cells. It may really be said that the uterine mucosa in menstruation shows

to a very slight extent the beginning stage of a decidua. Most of the surface epithelia of the mucosa are preserved; only a few are missing here and there. Changes similar to those described as characteristic for the menstruating uterine mucosa I have twice observed in the tubal mucosa during menstruation.

If we now take up the histology of the early placenta fetalis in tubal pregnancy, as far as I have been able to study it, we find, as already stated, that it does not differ from one of the same age in uterine gestation.

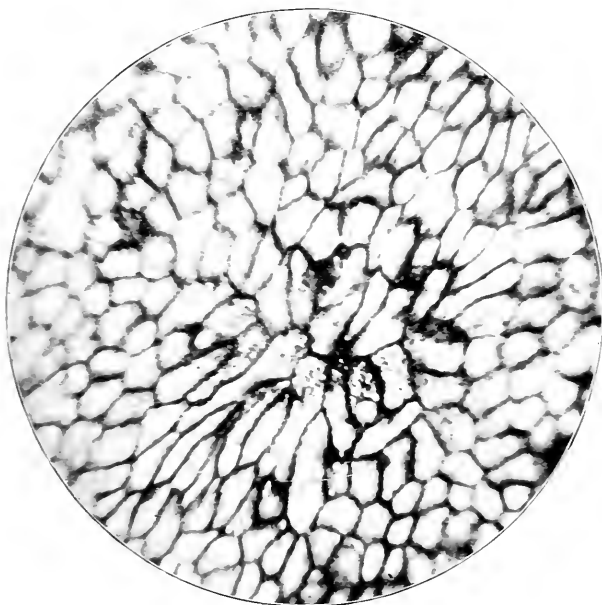


FIG. 1.—Amnion, silvered. Showing irregular cell boundaries.

The *amnion*, the innermost of the fetal membranes, consists of a mesodermal connective tissue (mesenchyma) of the type of very young embryonic tissue. We find an abundant homogeneous matrix with fusiform and stellate cells, situated in lacunæ. The innermost mesodermal tissue of the amnion is free from cells, and lined on this tissue, directed toward the centre of the amniotic cavity, we find the amniotic epithelium, which is of ectodermal origin. The amniotic epithelia form a single layer. Sometimes, however, they are so crowded that this layer becomes somewhat irregular. The cell protoplasm of these epithelia is markedly vacuolated. On transverse

sections and with ordinary stains it appears that the amniotic epithelia are cuboidal, mutually connected by intercellular bridges. If, however, one studies the amnion in a different manner—namely, in silvered surface preparations—one gets quite a different conception of the amniotic epithelium. I have previously reported the results of such a mode of procedure.¹ The process of silvering shows that the amniotic epithelia are very irregularly polygonal; intercellular bridges are not shown, but lymph stomata between the cells can be seen here and there. In other words, the process of silvering gives

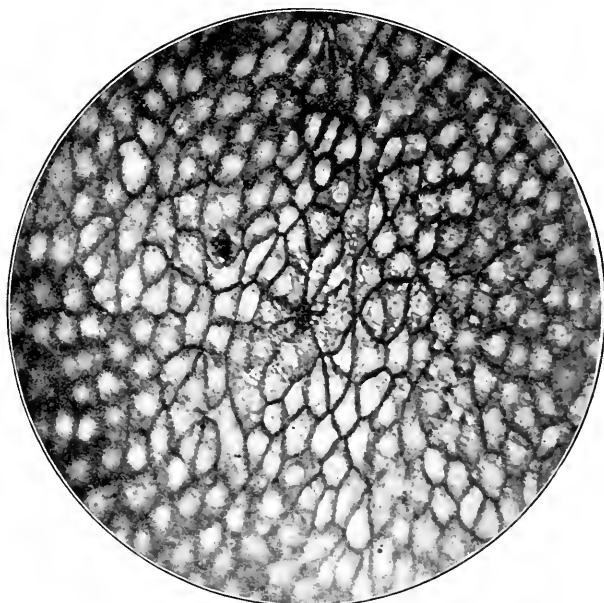


FIG. 2.—Amnion, silvered, and stained with hematoxylin. In the centre of the field and at the periphery, lymph stomata.

a picture such as this same method gives of serous membranes like the peritoneum. It appears, therefore, that the amnion must be looked upon as a serous membrane, and its internal lining perhaps would better be called an endothelial instead of an epithelial lining (Figs. 1 and 2).

The *chorion* shows a mesodermal core, as do the villi springing from the chorion. Both chorion and villi are covered by two epithelial cell layers. The inner layer is that of Langhans. In it cell boundaries can as a rule be well seen, though those

¹ December 13, 1897. Transactions Chicago Pathological Society, 1900, vol. iii., p. 342.

cell boundaries are by no means always as distinct as one might believe from the general descriptions. The cell layer of Langhans is surrounded externally by a strip of plasmodium in which numerous nuclei but no cell boundaries can be seen. This most external structure of chorion and villi is the syncytium, which has given rise to so much discussion. The latest observation upon early placentation in the human race appears to have definitely settled that the syncytium is of fetal and not of maternal origin. I have already, before the publication of these latest observations, *per exclusionem* come to the conclu-



FIG. 3.—Tubal pregnancy six to seven weeks old. Villi and intervillous space and decidua serotina (*d. d.*).

sion that the syncytium is of fetal origin. It is not derived from the uterine or tubal epithelium, because these degenerate in pregnancy at the site of the decidua serotina. Nor does the flattened epithelium of the decidua vera ever show any changes which might be interpreted as a syncytium formation. The syncytium neither comes from the maternal decidual structures nor is it derived from a proliferation of maternal vascular endothelium (Figs. 3 and 4).

There are other observations in comparative embryology which I think strongly and unmistakably point to the fetal

origin of the syncytium. I refer to the periblast of the fish egg. Here, of course, any source of error between maternal and fetal structures is excluded and the formation of the structures can be observed directly under the microscope. I have had a chance to study the formation of the periblast in the fundulus egg and in transparent pelagic fish eggs last year in the Wood's Holl Biologic Marine Laboratory, and I am of the opinion that the syncytium of the human placenta is the homologon of the periblast in the fish egg. According to Waldeyer and to some other observers, particularly Abel, chorion and villi have

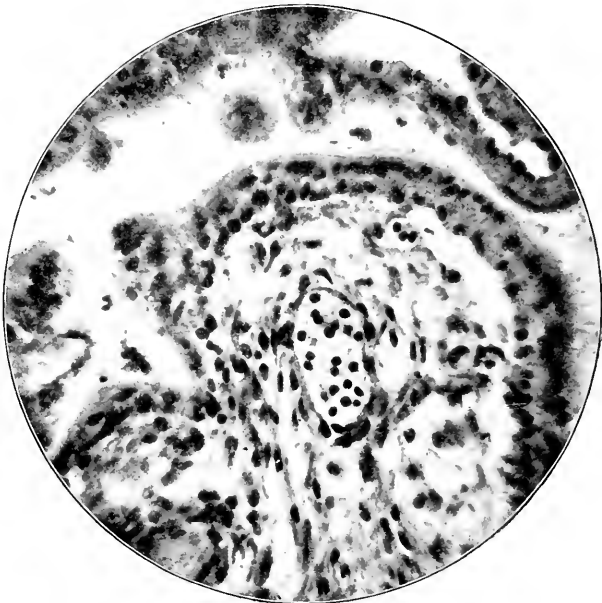


FIG. 4.—Villus highly magnified, showing Langhans layer and syncytium. In the mesodermal core a blood vessel with nucleated red blood corpuscles.

a third covering, namely, one with endothelial cells of maternal origin (Fig. 5). I have occasionally seen in uterine as well as in tubal placenta, outside of the syncytium covering the villi, a layer of very flat cells which I consider to be vascular endothelia of maternal origin. But such a lining is only found here and there and very exceptionally. The claim of Waldeyer that the whole intervillous space is lined by maternal vascular endothelium is certainly not correct, neither for the tubal nor for the uterine placenta, and I have had a chance to study the latter under the best possible conditions—namely, in placenta

obtained from the living, in situ, in uteri removed per operationem. The syncytium in tubal pregnancy forms the same kind of syncytial buds as have been so frequently depicted in the description of uterine placentation. Chorion and villi contain blood vessels: their blood is of course fetal blood. In early placenta we find every red blood corpuscle in the chorionic vessels and those of the villi nucleated and only red blood corpuscles; leucocytes are entirely absent in the earlier months of gestation. Engel has recently published observations on the red blood corpuscles in the embryo. I can confirm his obser-

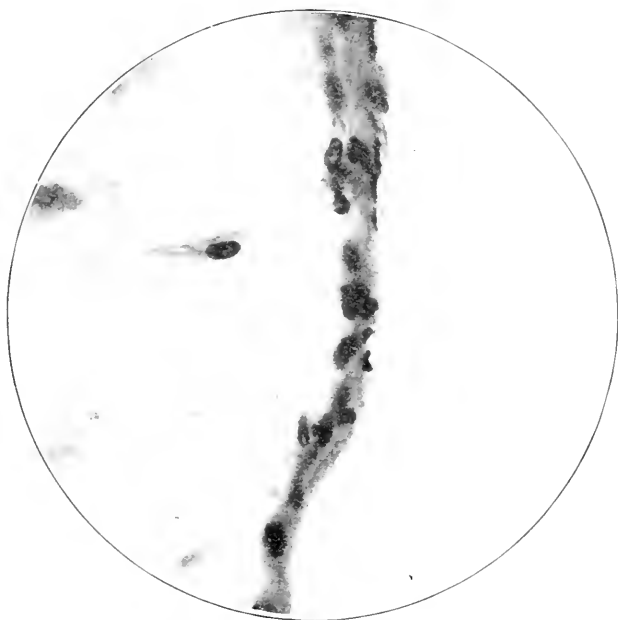


FIG. 5.—Villus of a uterine pregnancy two weeks old. Outside of the syncytium an incomplete layer of maternal vascular endothelium.

vations made on embryos of lower animals—namely, that the very earliest red blood corpuscles are of a large type, while with the advance of the development of the embryo the nucleated erythrocytes become smaller. Engel calls the larger, earlier size metrocytes of the first generation, and the smaller, later size metrocytes of the second generation. The former I have found well marked in placenta about four weeks or younger, the latter in placenta two months or older.

It has in former years been a much-contested question whether the intervillous space contains blood at all and

whether it contains maternal or fetal blood. This question was definitely settled by Waldeyer, who demonstrated that the maternal decidual blood sinuses empty free into the intervillous space. I have, in a previous paper, called attention to the fact that it is easy, in a proper specimen of an early placenta, to settle this question from a study of the blood itself. The chorionic vessels contain nucleated red blood corpuscles and no leucocytes. The intervillous space contains non-nucleated red blood corpuscles and a small number of leucocytes.

Before we say something about the mode of attachment of



FIG. 6.—Tubal pregnancy. Club-shaped plica with large blood space and decidual tissue.

the villi to the tube wall, it is necessary to enter into the question of the formation or non-formation of a decidua serotina in tubal pregnancy. Kühne recently, in an elaborate treatise on the anatomy of tubal pregnancy, denies absolutely the formation of a decidua serotina. I must most thoroughly contest this view. A decidua serotina is most certainly formed in tubal pregnancy. Kühne is mistaken if he holds that there is only formed a pseudodecidua not derived from maternal tissue, but from a proliferation of the Langhans layer of the chorionic villi. What does occur I think I may, from the study of my sections, describe very briefly as follows: Under

the stimulus of the developing ovum in the tube the connective tissue of the tubal mucosa undergoes progressive changes (Fig. 6). The cells of the connective tissue of the mucosa, normally fine and slender, become enlarged. Already in the earliest cases which I examined one finds, opposite the site of the ovum, cells which are of the same character as the decidual cells in the uterine serotina—namely, large oval or polygonal cells with large round or oval vesicular nuclei. The tubal plicæ, in consequence of the tubal pregnancy, become club-shaped, the vessels become enormously enlarged, the epithelium flattened

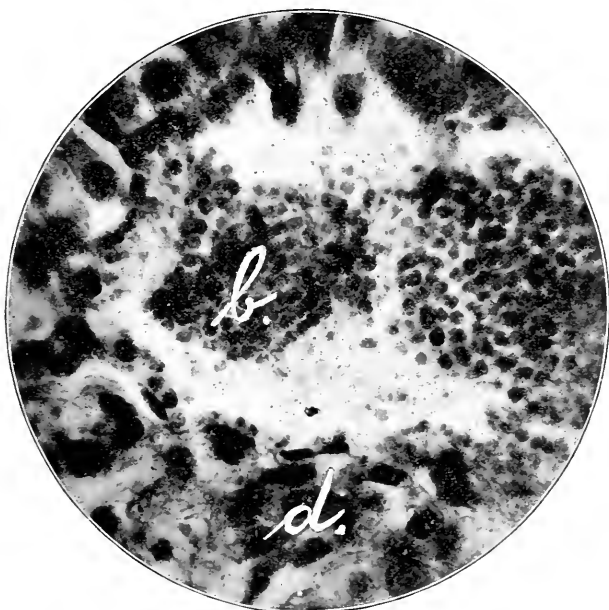


FIG. 7.—Decidual tissue (*d*) surrounding a decidual blood sinus filled with maternal blood (*b*). Tubal pregnancy six to seven weeks old.

or shed. The enlarging capillaries or veins become surrounded by cells absolutely decidual in their character. Neighboring club-shaped plicæ become fused with their extremities, and in this manner there is produced an upper compact and a lower spongy layer. A decidua vera is likewise formed, and in it the separation into a compacta and spongiosa is often better marked than in the decidua serotina where the compacta may be very thin. The formation of the decidua in tubal pregnancy has been so minutely and so accurately described by Webster that I have little or nothing to add. There is also,

according to my own observation, a reflexa formed, but it degenerates very early, and it is therefore, as a rule, impossible to demonstrate it. But the early degeneration of the reflexa also occurs, as first shown by Minot, in the uterine placenta (Figs. 7 and 8).

Cornil has just published a paper, "*Sur l'Anatomie et Histologie de la Grossesse tubaire*,"¹ based upon the examination of 7 cases, in which he says with reference to the formation of decidual tissue: "De la description qui précède, on concluera que la trompe en contact avec la placenta fœtal, joue par rapport à lui dans la grossesse ectopique, le même rôle que la musqueuse utérine et se conduit comme une véritable

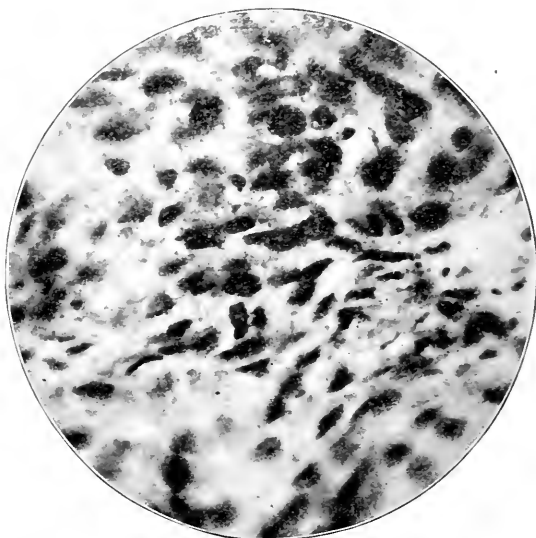


FIG. 8.—Decidual cells in serotina. Tubal pregnancy two to three weeks old.

caduque. . . ." And further: "Dans la grossesse tubaire la trompe joue donc un rôle analogue à celui de l'utérus dans la grossesse normal au point de vue de la formation d'une caduque basale et d'une caduque réfléchie."

The attachment of the placenta fetalis to the tubal decidua takes place in the same manner as in uterine placentation—namely, by the aid of columns of proliferated Langhans epithelia and also by syncytial buds which become attached to the decidua. The latter is covered by a layer of canalized fibrin. I find that the latter, in early, not much disturbed tubal pregnancy, is not very large in extent (Figs. 9 and 10).

¹ *Revue de Gyn.*, 1900, vol. iv.

I have so far described the formation of the placenta in tubal pregnancy and its histology as practically identical with the same tissues in normal uterine gestation. But this normal picture is seen only in a few of the cases which we examine, because early pathologic changes disturb and pervert the normal picture to such an extent that the original conditions are obscured.

The earliest decidedly pathologic changes are perhaps seen in those tubal structures which lie to the outside of the mucosa. I have found in some cases a considerable hypertrophy of the

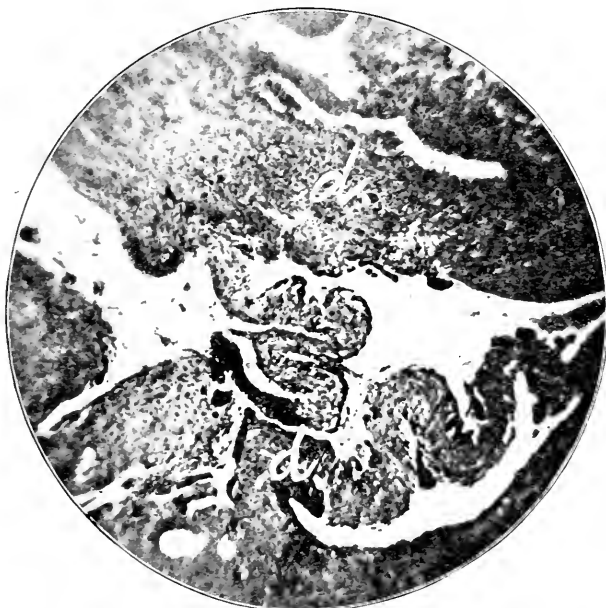


FIG. 9.—Tubal pregnancy six to seven weeks old. Powerful decidua serotina. In the middle of the field is seen a darker band, which is a strand of proliferated Langhans layer adhering to decidua (*Haftzotte*).

muscle fibres of the muscularis tubæ. As a rule, however, this hypertrophy is not commensurate with the age of the ovum. The muscle fibres even, sometimes in cases not older than four weeks, are atrophic instead of hypertrophic; the bundles of fibres are pushed apart, and the interstices between them are either filled with a loose connective tissue and leucocytes or with an edematous infiltration with leucocytes. It appears to me that one of the earliest and one of the most constant pathologic conditions found in tubal pregnancy is an edematous infiltration of the muscular and subperitoneal layers of the

tube wall, with such inflammatory manifestations as the presence of polynuclear leucocytes, lymphocytes, and occasionally plasma cells. One also finds in these layers enlarged vessels and evidences of subendothelial endarteritis and endophlebitis. Webster has described an extensive endothelial proliferation in the decidual vessels and sinuses. I think, however, that he is mistaken in this respect. I believe, from the examination of my own material, that the picture seen by Webster is not due to an endothelial proliferation, but to syncytial buds and



FIG. 10.—Same as Fig. 9, more highly magnified. *d, d*, decidua serotina; *l*, Langhans layer of *Haftzotte*.

proliferating Langhans cells which penetrate into and open up the maternal blood sinuses (Fig. 12).

While one can see in normal uterine placentation how the syncytium and the proliferating Langhans cells open up the maternal blood sinuses, this phenomenon becomes enormously exaggerated in tubal pregnancy. It is this very behavior of the placental embryonic ectoderm which brings about the most urgent and most important symptoms in tubal pregnancy. The extensive opening-up of maternal blood vessels and spaces brings about hemorrhages into the tube wall and intervillous hemorrhages. Very early we find, besides an extensive edema

of the muscular and subperitoneal layers of the tube wall, free blood in these tissues, due to the opening-up of blood vessels. The penetrating destructive action of the placental fetal ectoderm is very prominently mentioned a number of times in Cornil's quoted article. Among other statements he makes the following:

"Devie de son but physiologique, placé dans un siège anormal, le placenta fétal, situé dans la trompe se conduit comme un néoplasme malin, en ce sens qu'il envahit transforme et détruit les tissus normaux pour frayer un passage a ses villosités."



Fig. 11 —Tubal pregnancy. Tubal decidua vera. c, compacta; s, spongiosa.

sités. Il produit dans la trompe de Fallope les mêmes effets que le deciduome malin dans la paroi de la cavité de l'utérus."

The question arises, why is the placental fetal ectoderm able to bring about such an enormous destruction in tubal pregnancy while it does not in uterine pregnancy?

I have already called attention above to the fact that we notice early in tubal pregnancy an enormous edematous infiltration of the tube wall, in consequence of which the cellular elements of the muscular and subperitoneal layers become very much rarefied. The decidua in tubal pregnancy, on the other hand, is comparatively thin, its blood sinuses and open

spaces comparatively extensive. All these conditions, then, unite to establish a very insufficient barrier to the proliferating Langhans layer and syncytium. These proliferating processes are normally necessary to bring about a firm union between the ovum and the fruit bearer. When, however, the tube has assumed the rôle of the latter, its wall, in consequence of a pathologic extensive edematous infiltration, is not able, like the firm uterine muscularis, to prohibit any further proliferation of the fetal ectoderm. We then see an epithelial proliferation which reminds one of the processes

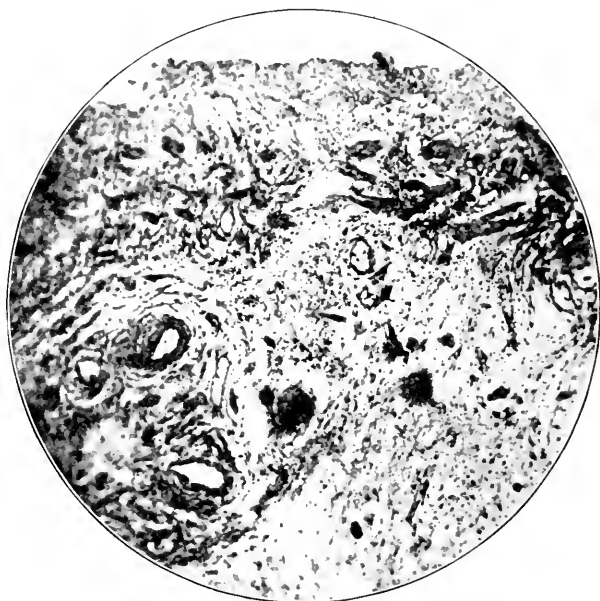


FIG. 12.—Tubal pregnancy four weeks old. Muscular and subperitoneal layers of tube wall, showing an extensive edematous infiltration.

seen in a syncytioma malignum of the uterus. The processes of the unlimited proliferation of the placental fetal ectoderm in tubal pregnancy bring to mind the carcinoma theory of Thiersch, who thought that the epithelial proliferation in carcinoma is due to a lessened vitality and lessened power of resistance of connective tissue elements. This idea has, of course, been given up, but in tubal pregnancy we see indeed that epithelial structures may proliferate extensively into connective tissue on account of the lessened resistance of the latter. But here, of course, the comparison stops, because the embry-

onal ectodermal epithelium of the placenta fetal^{is} in ectopic pregnancy does not acquire true malignant properties as it does in a syncytioma malignum.

Just as there occur early in tubal pregnancy, in consequence of the boundless proliferations of the fetal ectoderm, hemorrhages into the muscular and subperitoneal layers, so do we also find very early extensive hemorrhages from the decidua into the intervillous space.

I think that the extensive hemorrhages from the decidua serotina are of the greatest importance in bringing about the death of the embryo and terminating the progress of tubal pregnancy.

Tubal pregnancy, according to the statements of most authors, is almost universally interrupted by either one of two occurrences—by rupture or by tubal abortion. Martin and Orthmann, in their recent elaborate treatise, say: "In the majority of cases there occurs, as a rule during the first four months, an early interruption of tubal gestation. The interruption is brought about by one of two events—either by a tearing of the gestation sac or by abortion.

"It was Werth who first called attention to the latter type, the significance of which is more and more recognized."

Webster, in enumerating the causes which terminate ectopic gestation, among other events mentions the following: "In a number of cases the ovum may die as a result of hemorrhages in the membrane, but without very marked outpouring of the blood around it. There is then formed what is known in uterine pregnancy as 'blighted ovum,' 'fleshy or carneous mole,' or 'apoplectic ovum.' The amount of blood extravasated varies. It may be limited to the decidua and chorion, and may be so great as to compress and to almost close the amniotic cavity, or it may burst into the amniotic cavity. The fetus may be partly or entirely destroyed. Immediately after these changes the ovum looks like a fresh blood clot." Henrotin, touching upon the same point, states: "An ovum during its first few weeks of growth, depending as it does for life upon very delicate chorionic villi lightly attached, is in great and constant danger of destruction. In some cases, by hemorrhage, the circulation is cut off, the ovum is partially or totally detached. . . ."

It appears to me that the most frequent primary cause of disturbance of nutrition of the ovum and of the interruption of tubal pregnancy is neither rupture nor abortion, but hemor-

rhage from the tube wall or gestation sac into the intervillous space. Even if these hemorrhages are at first not so severe as to detach the chorion more or less completely from the decidua, they are dangerous under any condition to the development of the embryo, because they are liable to detach and crush a number of villi, and in the course of time generally will cause the death of the embryo.

In the histologic examination of my 40 specimens of tubal pregnancies, many of which were obtained by operation shortly after rupture had taken place, I was struck by the observation that the degenerative changes of the fetal placenta were so great that they must have antedated rupture for a considerable period. By the study of the blood in the intervillous space and the degenerative changes of the villi, I came to the conclusion that hemorrhages from the gestation sac at the site of the placenta occur very frequently and then often interrupt tubal pregnancy long before a rupture takes place. These hemorrhages may very appropriately be designated as "intervillous hemorrhages." I will cite from my material two cases of Dr. Manierre, both operated on before rupture had occurred, as offering evidence well adapted to substantiate the claims made. The microscopic examination of these specimens, in which none of the degenerative changes found can be connected with rupture because none has taken place, furnished the following result:

CASE I.—Amnion and chorion are completely fused. The amniotic epithelium is well preserved. The amniotic mesoderm is likewise in a fair state of preservation. The chorionic mesoderm shows some degenerative changes; its cells are not so well preserved and the nuclei are frequently indistinct; in some places this tissue has become coarsely fibrillar, and here nuclei are entirely missing. The chorionic mesoderm is slightly infiltrated with hematoidin granules. The two ectodermal layers of the chorion, the Langhans layer and the syncytium, can in some places be well seen with their distinguishing features. In others a single layer is present only, either the Langhans with large, swollen cells or a very flat syncytium; while in still other spots both epithelial layers have entirely disappeared. The intervillous space contains villi in all stages of degeneration. Perfectly normal villi are entirely wanting. Degenerative stages are shown to a degree of the mere shadow of a villus consisting on section of an indistinct spherical mass with a hyaline band as its periphery

and a granular débris as its centre. Blood vessels could not be found either in the chorion or in the villi. The latter are contained in a network of fibres, granular débris, and hematoidin crystals and granules. The gestation sac opposite the placenta is quite thin. Toward the intervillous space it shows a small band of a compacta, composed of large, degenerating decidual cells. The band presents an abundant infiltration with round cells of the lymphocyte and the polynuclear leucocyte type. Many of the latter show nuclear fragmentation. Outside of the compact layer of the decidua there are found large open spaces (spongiosa); these are, of course, not true gland spaces, but they have originally been formed by the fusion of the plicæ of the tubal mucosa. On the outside of the spongiosa there is a thin layer of fusiform cells and fibres. Muscular fibres were not found in this layer. The two layers described last show a round-cell infiltration, although not as marked as the compacta. There are also found maternal blood sinuses in the wall just described; they are of very large calibre, and their lumen shows granular débris, hematoidin crystals and granules, fibrin, and also red blood corpuscles fairly well preserved in size, shape, and staining properties.

Transverse sections from parts of the tube to the inside of the gestation sac show well-preserved tubal plicæ. The lining epithelial cells are of a columnar type and their ciliæ can be well seen. The core of the plicæ shows enlarged vessels surrounded by connective-tissue cells which are not of the slender type found in the non-pregnant tube; they are, on the contrary, quite large and oval, with large vesicular nuclei, and very much approach the type of the decidual cells. Here the muscular fibres of the tube wall are very much hypertrophied, and the bundles have been pushed apart by intervening connective tissue. Foci of small round-cell infiltration are seen everywhere in the muscularis, particularly around enlarged vessels. The peritoneal covering does not show any marked changes.

CASE II.—It is hardly necessary to go into all of the details of the result of the microscopic examination of this second case, since it is in most respects only a repetition of the result furnished by Case 1. The following exceptions must be noted: While the intervillous space, as in Case 1, shows granular débris and the derivatives of decomposing hemoglobin, it also shows densely crowded blood corpuscles of the maternal type, normal in size, shape, and staining properties. This shows

that blood from the maternal tissues must have entered into the intervillous space shortly before the removal of the pregnant tube; while in Case 1 the microscopic examination shows that this cannot have been the case, since all the blood in the intervillous space was badly decomposed.

In Case 2 there are also found a considerable number of badly degenerated villi, but many of them are in a very fair state of preservation, with fairly normal mesodermal and ectodermal elements. Blood vessels with blood cannot be seen either in the chorion or in the villi; in some places, however,

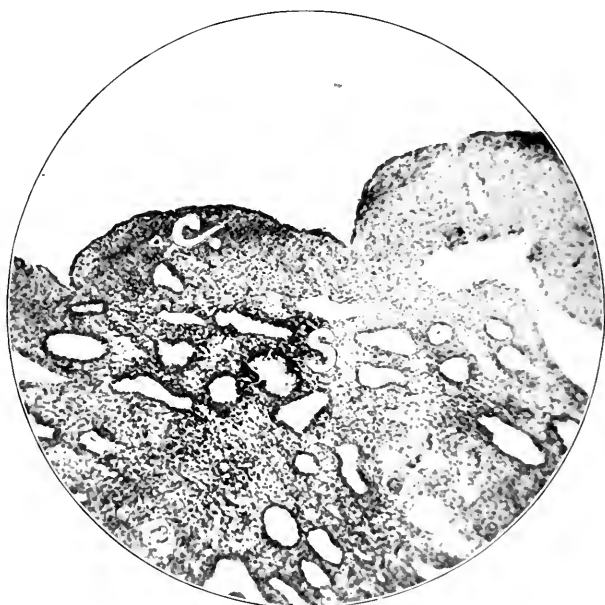


FIG. 13.—Tubal pregnancy. Uterine decidua vera. c, compacta; s, spongiosa.

it appears as if collapsed empty blood vessels could be made out.

The gestation sac in Case 2 is much thicker and shows less marked degenerative changes than the sac in Case 1. The vessels are quite thick-walled, most of the thickening being due to a subendothelial proliferation.

The round-cell infiltration of inflammatory changes is likewise found freely. Where the plicæ of the tubal mucosa are still preserved they have become club-shaped, their epithelial cells are somewhat flattened, and their core shows typical large decidual cells.

From the microscopic examination of both of these cases, it is seen that hemorrhages had occurred into the intervillous space and extensive blood coagula had been formed in them. These had damaged the villi, interfered with the nutrition of the embryo, and brought about the death of the latter. One of the embryos was found to be macerated, one was yet in a fair state of preservation. Considering the thinness of the gestation sac in Case 1 and its advanced state of degeneration, a rupture would probably have taken place soon. In Case 2 this danger seems to have been less imminent.

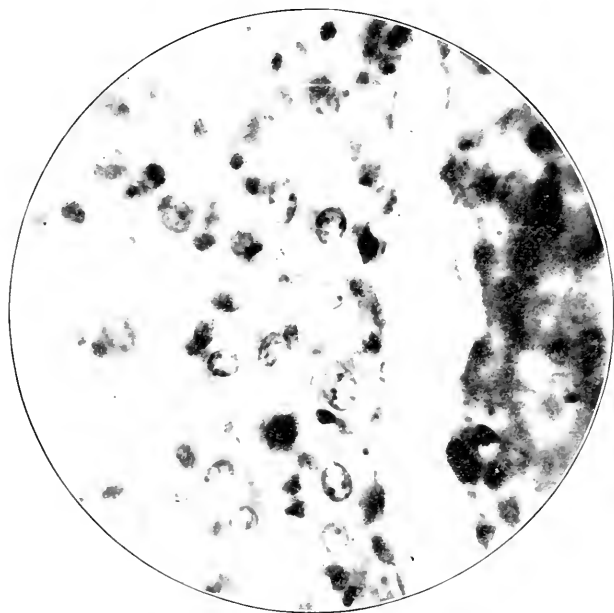
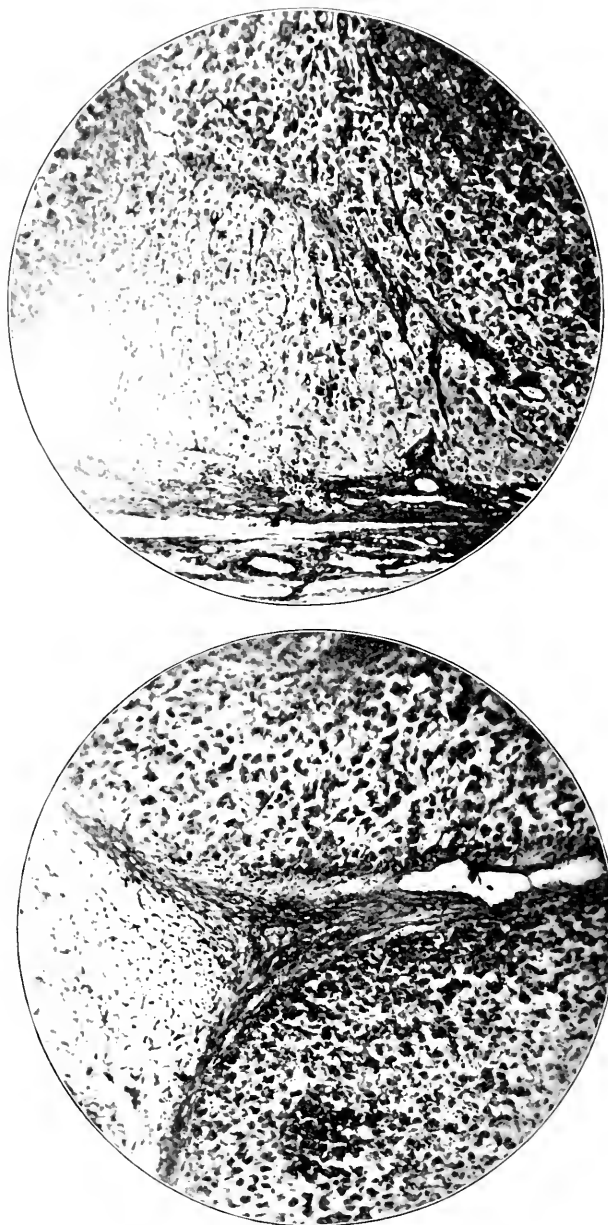


FIG. 14.—Uterine decidua in a case of tubal pregnancy. Large decidua cells surrounding an open space of the spongiosa.

We must, from a pathologic point of view, strictly differentiate between the events and phenomena which really interrupt tubal gestation and those occurrences, like rupture and tubal abortion, which so frequently lead to the most urgent clinical symptoms. This is, of course, by no means a matter of theoretical interest only, but one of the highest practical importance. If it should be possible to establish a set of symptoms as characteristic for "intervillous hemorrhages," the operator could step in in good time to save his patient from the great danger of subsequent rupture.

A question of great practical interest from a diagnos-

tic point of view is whether there is formed in tubal preg-



FIGS. 15 AND 16.—From two corpora lutea from two cases of tubal pregnancy.

nancy a *uterine decidua*. In quite a number of the cases of tubal pregnancy which I examined, the operators, before the

main operation or at the time when the latter was made, have curetted the uterus. An examination of the curetted material in a majority of cases has shown that a typical decidua had been formed in the uterus (Figs. 13 and 14). Sometimes, however, a uterine decidua could not be demonstrated. The reason for the failure to find one is, however, not due to its non-formation. When intervillous hemorrhages, death of the embryo, rupture, or abortion occur, the uterine decidua is often shed and a subsequent examination of the curettings is of course negative. One of the cases studied furnished very instructive information in this respect. In this case there were removed for certain reasons the uterus and both adnexa. In the examination of the uterine wall it was found that the whole uterine mucosa was of the non-pregnant type. There was only found in one place a piece of decidua, badly degenerated, and attached to the wall of the uterus by a blood coagulum. If in this case the whole of the uterine mucosa had not been examined, or if the operation had been made only a little later, no decidua at all would have been found, and the case could have been used in favor of the claim that no decidua had been present at all.

The examination of a large number of cases of tubal gestation has also furnished material for a study of the corpus luteum. With reference to the histology of the latter, I came to the same conclusions arrived at recently by Clark¹ in an excellent paper on this subject. I find that the so-called lutein cells are not derived from the zona granulosa, but that they come from the theca interna of the follicle. The fusiform cells lining or surrounding the pillars of lutein cells come from the theca externa folliculi (Figs. 15 and 16).

I have refrained in this short summary from taking up very minutely histological details about the tubal placenta, which may now be considered as pretty well settled. I have dwelt somewhat more upon other points which are still contested and upon such of my observations as may perhaps contain features of novelty of some importance—such as the character of the amnion as a serous membrane; the differences of the blood in the chorionic vessels and that in the intervillous space; the relation between the early edema of the tube wall and the boundless penetrating power of the placental fetal ectoderm; and, last, the importance of what I have called intervillous hemorrhages for the termination of tubal pregnancy.

¹ Clark: *Archiv f. Anat. u. Physiol., Abth. Anat.*, 1898.

THE TECHNIQUE, INDICATIONS, AND REMOTE RESULTS OF
SUTURING THE ROUND LIGAMENTS TO THE VAGINAL
WALL FOR RETROVERSIONS AND FLEXIONS OF
THE UTERUS.¹

BY

HIRAM N. VINEBERG, M.D.,
New York.

(With six illustrations.)

In 1897 I had the honor to present to the Society a paper on "Vaginal Suturing of the Round Ligaments for Backward Displacements of the Uterus," with a tabulated report of 15 cases.

At that time my experience with the operation was limited to 18 cases and to a period covering fifteen months.

The indications and results of the operation were stated with a certain degree of reserve, as the number of cases then was too small and the period of observation too short to warrant definite conclusions. But now, with a larger experience, embracing 38 additional cases (making in all 53), with a period of observation extending over four years, I feel I am enabled to speak of the operation and its results in more confident terms. In order to make my observations more uniform, I have adhered pretty closely to the same technique in all the cases, particularly as I found the results in the early cases satisfactory.

History.—It may be of interest and not devoid of instruction to sketch briefly the history of the various methods that have been devised for the surgical relief of backward displacements of the uterus by an anterior vaginal section.

It was in 1888 that Sänger² gave expression to the thought that the uterus could be kept in a forward position by a suture passing through the fundus and anterior wall, or by making a transverse incision in the anterior vault, pushing up the bladder, and suturing the fundus directly to the vaginal wall.

¹ Read before the American Gynecological Society, at Washington, D. C., May 2, 1900.

² Centralbl. f. Gyn., 1888, p. 34.

It was left for Schücking,¹ a little later in the same year, to practically carry out the first proposition. He constructed a special needle with a long handle for the purpose. Schücking, however, found very few imitators, as the method partook of blind surgery and was not attended with permanent results. Experiments on the cadaver demonstrated that the bladder would frequently, and the intestines occasionally, be punctured in the procedure.

It was not until 1892 that the more logical proposition of Sänger was put into practice by two different operators, Mackenrodt and Dührssen, both of whom have broken many lances upon the claim of priority.

It is always an ungrateful task on the part of an outsider to enter into a discussion of this nature. But a sense of historical truth compels the writer to state that, as far as he has been able to ascertain from medical literature, Mackenrodt² presented his paper before the Berlin Gynecological Society May 27, 1892, and Dührssen³ presented his paper before the same Society July 12, 1892. Consequently the claim of priority belongs to Mackenrodt. If Dührssen has published anything in reference to his method prior to that, the writer has been unable to find it after a careful search of the literature in the library of the New York Academy of Medicine.

The technique of these operations differed somewhat in detail. Mackenrodt made a longitudinal incision and passed his uterine fixation suture just above the internal os. Dührssen made a transverse incision and his fixation sutures were passed higher up on the uterine wall. Both operators as yet had not made it a part of the technique to open the peritoneum.

In 1893 Winter⁴ modified Mackenrodt's operation (1) by always performing an anterior colporrhaphy, so as to make the anterior vaginal wall more rigid and hence a better fixed point for the uterine fixation sutures; and (2) by carrying the fixation sutures higher up on the uterus. He was led to devise these modifications by the poor results he obtained in fourteen cases operated upon in exact accordance with Mackenrodt's technique.

The writer was the first to perform and describe the operation of vaginal fixation in this country. His first paper was

¹ Centralbl. f. Gyn., 1888, p. 181.

² Zeitschr. f. Geb. u. Gyn., Bd. xxiv., p. 315.

³ Zeitschr. f. Geb. u. Gyn., Bd. xxiv., p. 369.

⁴ Centralbl. f. Gyn., 1893, p. 627.

presented to the New York Obstetrical Society November 21, 1893, and published in the *New York Journal of Gynecology and Obstetrics* for January, 1894.

The method which he adopted at the outset was Winter's modification of the Mackenrodt operation.

An incomplete description of Dührssen's operation appeared from the pen of Dr. J. Rosenthal, of Berlin, in *THE AMERICAN JOURNAL OF OBSTETRICS* for September, 1892, page 336.

In 1894 Küstner¹ modified Mackenrodt's operation by opening the peritoneal cavity in every case. Dührssen² made a similar addition to his technique in the same year. The writer adopted the modification in the latter part of 1894, and presented a communication upon it to the New York Obstetrical Society December 14, 1894.³

With this improvement in the technique, which made the results more permanent and afforded an opportunity of directly inspecting and surgically treating the adnexa, both Dührssen's and Mackenrodt's operations became very popular and were extensively practised.

But, like a thunderbolt from a clear sky, in the latter part of 1895 appeared Strassmann's⁴ report of serious dystocia as a result of vaginal fixation by Dührssen. Similar reports of other cases soon appeared, and vaginal fixation rapidly fell into disfavor. At first Mackenrodt took pleasure in pointing out that these cases of dystocia occurred only where Dührssen's technique had been followed. But when Graefe⁵ reported a case of serious disturbance in labor in a case in which Mackenrodt's technique had been employed, Mackenrodt⁶ publicly stated that he had discarded the operation of vaginal fixation and employed instead vesicofixation.

Although the writer's experience with labor following vaginal fixation had been uniformly good—several cases going to full term and having easy labors—the numerous cases of dystocia reported in the German journals had a disquieting effect upon him. He was in constant fear that some of the 45 cases he had operated upon might turn up at any moment, presenting similar obstacles, to overcome which might call for a capi-

¹ *Deutsch. med. Woch.*, 1894, No. 19.

² *Berlin. klin. Woch.*, 1894, Nos. 29 and 30.

³ *THE AMERICAN JOURNAL OF OBSTETRICS*, February, 1895.

⁴ *Berlin. klin. Woch.*, 1895, No. 5.

⁵ *Monatsch. f. Geb. u. Gyn.*, 1895, vol. ii., p. 472

⁶ *Berlin. klin. Woch.*, 1895, No. 5.

tal operation. Time has shown that, so far as his cases were concerned, his fear was unfounded. The only disturbance met with has been the occurrence of abortion in 4 cases between the third and fourth months of pregnancy.

About this time appeared Milander's¹ article reporting 11 cases of dystocia following ventral fixation. A study of these reports showed that the cases of difficult labor followed the Leopold-Czerny method, in which the uterus is sutured directly to the abdominal wall. No trouble during either gestation or parturition had been met with in Olshausen's method, in which the round ligaments and adjacent broad ligaments had been sutured to the wall of the abdomen. It occurred to the writer: "Why not adopt this method by operating through a vaginal incision and thus suturing the round ligaments to the vaginal wall instead of to the wall of the abdomen?" Wertheim, of Vienna, seems to have gone through the same process of reasoning by a close perusal of Milander's paper: for at the end of a lengthy article in the *Centralblatt für Gynäkologie*, 1896, No. 2 (January 11), on dystocia following vaginal fixation, he made the following statement: "Perhaps these facts [the absence of dystocia following Olshausen's method of ventral fixation] would argue in favor of a corresponding modification in vaginofixation."

The writer performed his first case of vaginal suturing of the round ligaments February 4, 1896, and briefly described the technique in a paper on "The Indications for Vaginal Fixation," read before the Obstetric Section of the New York Academy of Medicine February 27, 1896. This paper was published in the *Medical News* for March 14, 1896.

Wertheim's first description of the operation appeared in the *Centralblatt für Gynäkologie* for March 7, 1896. In two cases a technique similar to mine was carried out: in the other cases the round ligaments were shortened, as in the Wylie-Mann operation, through an abdominal incision.

It is evident from the foregoing facts that Wertheim and myself arrived at the same conclusions and devised a similar technique independently of each other at about the same period of time. I described the operation more fully in a paper before the New York Obstetrical Society on April 10, 1896.² Notwithstanding this, the Germans have not accorded the writer

¹ *Zeitsch. für Geb. u. Gyn.*, Bd. xxxii., Heft 3.

² The American Gynecological and Obstetrical Journal, June, 1896.

any share in the invention of the method. They speak of it as the Wertheim-Bode operation.

Bode's article appeared in the *Centralblatt für Gynäkologie* for March 28, 1896, and his method is essentially the same as Wertheim's for folding and suturing the round ligaments upon themselves.

H. Byford, of Chicago, on April 17, 1896, presented a paper¹ before the Chicago Gynecological Society describing an operation for retroversions by vaginal section, the essential points of which were: (1) anterior colporrhaphy; (2) suture of the fundus uteri to the peritoneal covering of the upper portion of the bladder; (3) suture of the round ligaments to the uterus above its normal insertion at a point as far toward the pubic end as can be grasped.

J. Riddle Goffe in 1897 presented a paper before the American Gynecological Society² describing shortening of the round ligaments through the anterior vaginal fornix. In his first case he sutured the two ligaments together in front of the uterus; in the other cases the ligaments were sutured to the horns of the uterus, as was done by Byford.³ Later Goffe⁴ modified the technique by freeing the ligament from its peritoneal covering first and then folding it upon itself and suturing it. In one case the hemorrhage caused by this procedure was so troublesome that he had to resort to extirpation of the uterus. I am under the impression that he has since then discarded this step in the technique, and shortens the ligament by folding and suturing it upon itself, as in the Wertheim method.

Technique.—Owing, no doubt, in part to the wording of the title of my original papers, I find that the method I employ has not been correctly understood. Even at the risk of repeating what I have said on a former occasion, I will, therefore, describe at length in this paper the technique, endeavoring to make my meaning clear by the aid of some illustrations.

The patient is prepared as she would be for a vaginal hysterectomy, the precaution being taken to have the abdomen also prepared for a laparotomy in the event of some emergency arising which would call for a suprapubic incision.

In cases demanding it the uterus is first thoroughly cu-

¹ The American Gynecological Society, June, 1896.

² Transactions American Gynecological Society, p. 235, 1897.

³ *Id.*, 1897, p. 235.

⁴ Journal of the American Medical Association, 1898, p. 508.

retted; in others it is simply dilated and irrigated with an antiseptic solution, and the cervix is packed lightly with iodoform gauze, or the os is closed by suturing the lips together.

First step. The nymphæ are sutured to the skin of the thighs so as to keep them out of the way. The cervix is then seized with two volsellæ and forcibly drawn outside the vaginal orifice and downward, and the anterior vaginal wall is caught with another volsella near the urethral meatus and



FIG. 1.—The nymphæ are sutured to the skin of the thighs to keep them out of the way. The cervix is forcibly drawn outward and downward by two volsellæ. The two vaginal flaps are dissected away from the bladder, the lowest attachment of which to the cervix is indicated by the lighter area produced by the sound being pushed against the lowest point of the bladder wall.

drawn upward, thus putting the anterior vaginal wall on the stretch. With a sharp scalpel or one with a curved blade¹ a longitudinal incision is made extending from the urethral mound to the vaginal attachment of the cervix. If the vag-

¹ Author's knife. New York Medical Journal, April 7, 1894.

inal wall has not been cut entirely through with the first stroke of the knife, as is usually the case, the division should be completed by seizing the edges of the incision with anatomical forceps and cutting between them. By observing this little precaution there can be no risk of cutting into the bladder. The two flaps thus created are now separated, partly by blunt and partly by sharp dissection, from the underlying bladder.



FIG. 2.—The lower angles of the two vaginal flaps are held apart by tenacula, and a semilunar incision (indicated by the dark line) is made upon the cervix about one centimetre below the lowest attachment of the bladder, thus severing the vesico-cervical septum.

In order to give one's self ample room, generous separation of the vaginal flaps should be made. The lower angles of the flaps are then held apart and the cervico-vesical septum is divided by a semilunar incision about one centimetre below the lowest attachment of the bladder to the cervix. Before mak-

ing this incision it is prudent to pass a sound into the bladder to ascertain how far down upon the cervix the bladder reaches, by gently pushing the sound downward and forward.

The bladder is next pushed up from the uterus with the index finger, as is done in vaginal hysterectomy.

Second step. A short vaginal retractor is now inserted into the anterior opening, thus keeping the bladder out of the way and exposing the vesico-uterine fold of peritoneum. The



FIG. 3.—The bladder has been pushed up out of harm's way, as in a vaginal hysterectomy, and the first step taken to antevert the uterus by a traction suture introduced into the anterior uterine wall as high up as possible. The vesico-uterine peritoneal fold had been cut with scissors before the traction suture was applied.

fold is caught with forceps and a transverse incision made with scissors just below this bite. Before loosening the hold of the forceps a suture is carried through the peritoneum above the point of the incision, and it is left long and clamped. Its purpose is to draw down the bladder peritoneum toward the end of the operation when the slit made in the peritoneum is sutured.

Third step. The cervix is pushed backward into the pos-

terior fornix with the volsella, thus tilting the body of the uterus somewhat forward; and, with the anterior vaginal retractor in place, a traction suture is carried by means of a short, stout, curved needle through the exposed anterior uterine wall as high up as possible. With this suture the uterus is further anteverted and brought into the incision. It may take one or more additional traction sutures, each carried



FIG. 4.—Showing a complete delivery of the fundus (which in this instance was very large), with the left adnexa brought into the wound for inspection and surgical treatment.

higher up on the uterine wall, to completely deliver the fundus through the incision.

Fourth step. With the index and middle fingers the adnexa, one after the other, are brought into the incision, subjected to visual inspection and to such surgical treatment as their condition calls for. It is astonishing with what ease, in the majority of cases, a resection of an ovary or of a tube can be accomplished in this manner. Still, it is but fair to state

that cases are sometimes met with in which the adhesions are very firm, or the infundibulo-pelvic ligament very short, or the broad ligaments very rigid and infiltrated. In these cases it is more prudent to desist from using too much force in the attempt to deliver the adnexa through the vaginal incision, and to complete the operation by the suprapubic method. If one adheres to the indications as laid down later in the paper, such a contingency is not often likely to arise.

Fifth step. The adnexa having been replaced within the peritoneal cavity, the uterus is retracted to one side, and with

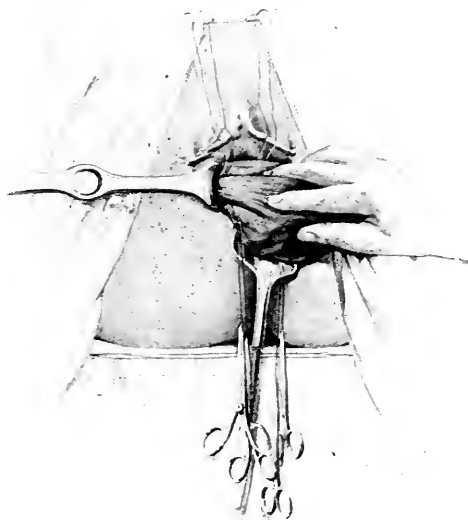


FIG. 5.—Shows the two sutures introduced behind the right round ligament (in the figure the sutures are indicated as too close together), the uterus being retracted to the left side for the purpose. The ends of the left round-ligament sutures are also seen.

a small, fine needle a silkworm-gut suture is carried behind the round ligament of the opposite side about three or four centimetres from its insertion into the uterus. Some care is necessary in passing this suture to avoid the small arterial twigs which supply the ligament, as a troublesome hemorrhage may occur from the needle piercing one of them. Should it unavoidably occur, the bleeding point can be readily secured by passing a hemostatic suture.

The suture may be made to enter the middle of the ligament and come out a little below its inferior border, or it may be made to enter above its upper margin and carried well behind it. This is a matter of no importance, the essential being that the suture takes a good bite of the tissues. A second suture is passed in the same way one or two centimetres nearer the uterine insertion. The ends of the sutures are secured above and below with small artery clamps, which may be numbered so as to avoid confusion when it is necessary to carry the sutures through the vaginal flaps.

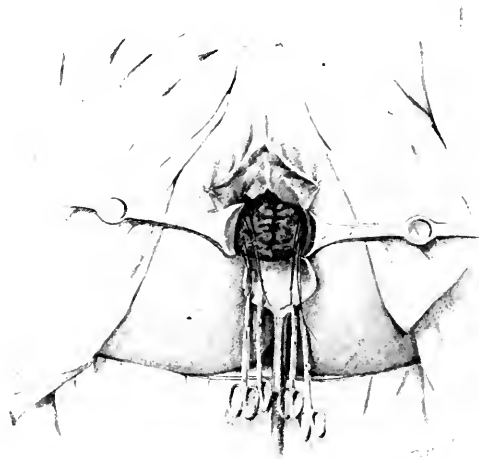


FIG. 6.—The round-ligament sutures have been carried through the antero-lateral vaginal wall on both sides and are ready to be tied. The vaginal flaps meet together in the centre, but have not yet been sutured.

This procedure is repeated on the opposite side, and the uterus is returned within the peritoneal cavity by pushing the fundus backward with the fingers and drawing the cervix downward and forward with volsella.

Sixth step. The outer round-ligament suture is now carried with a leading suture through the vaginal flap at a point corresponding to the anterior lateral sulcus and as near the pubic arch as possible. The inner suture is passed through the flap at a suitable distance inward from the first. The same

thing is done on the opposite side, and the sutures are tied loosely in the vagina while the uterus is being held forward by means of the traction sutures. The traction sutures are then cut and removed. The upper edge of the peritoneum is next drawn down by means of the suture which is attached to it, and the slit in the peritoneum is closed by a continuous catgut suture.

Seventh step. In the event of a cystocele or a redundant anterior vaginal wall having been present, a strip of suitable width is excised from each vaginal flap and the two flaps are coaptated by a continuous catgut suture. The last couple of stitches are made to catch up the cervical tissue so as to attach the vaginal wall to the cervix, as normally obtains. If there has been a good deal of oozing of the field of operation, I insert a narrow strip of gauze at the lower third of the vaginal wound, in the space between two sutures, to act as a drain. This is removed at the end of forty-eight hours.

When the uterus is unusually large and heavy, or when the utero-rectal ligaments are put on high tension by anteverting the uterus, it is wise, according to my experience, to employ a single uterine fixation suture in addition to the round-ligament sutures. This suture should not be placed too high upon the uterine wall, so as to avoid the possibility of dystocia in the event of pregnancy. One of the traction sutures, usually the one first applied—which is, as a rule, a little above the internal os—may be used for this purpose. It is carried through the vaginal flaps, before they have been sutured together, about 1.5 centimetres from their margins, and tied loosely.

Finally, any operation on the cervix, that may be called for is now done, and the posterior vaginal wall or perineum subjected to any plastic operation that may be deemed necessary.

The patient is kept in bed for twelve days, at the end of which time the round-ligament sutures may be removed, as may also the uterine suture if present. In some cases the urine has to be withdrawn with a catheter for the first few days; in other cases again the patient is able to void the urine from the very first.

In only one of my cases (29) was a pessary worn subsequent to the operation for a period of six weeks. In this case the operation immediately followed a curettage for an incomplete abortion at the eighth week of pregnancy, and the pessary was made use of to support the large, subinvolted

uterus until perfect involution had taken place. When the patient was examined two years later the uterus was of normal size and in excellent position. The woman in the meantime had been perfectly well.

Method Followed.—In 11 cases, only one round-ligament suture on either side was employed. In 4 of these cases (2, 3, 4, 5) an additional uterine suture, as described under technique, was resorted to. In 9 more cases the uterine suture was used with two round-ligament sutures on either side. In the remaining 30 cases, only two round-ligament sutures on either side were employed.

Additional Operations at the Same Sitting.—With very few exceptions a curettage preceded the operation. Anterior and posterior colporrhaphy was performed in 14 cases; amputation of the cervix in 17 cases; trachelorrhaphy in 6 cases; Tait's operation for complete laceration of the perineum in 2 cases; the excision of a vaginal cyst in 2 cases; salpingo-oöphorectomy in 5 cases; ovariectomy in 2 cases; conservative surgery upon the tubes and ovaries in 25 cases. Thus in 32 cases (64 per cent) some surgical work upon the adnexa was found necessary.

Immediate Results.—All of the 50 cases tabulated,¹ and 3 additional ones performed this year and not included in this paper, have recovered from the operation. In other words, there has been no mortality in the 53 consecutive cases. When we consider that in every instance the peritoneum was opened, the adnexa brought into view and in many instances (64 per cent) subjected to conservative surgical measures, and that the cases were operated upon under varied conditions, some in tenement houses, some in the hospital, and some in private houses, the absence of any mortality is very gratifying.

Convalescence was uneventful in 48 out of 53 cases.

In 3 cases (15, 20, 41) there developed a small purulent collection either at the side or behind the uterus, which was readily treated by a vaginal incision without narcosis. The ultimate results of two of these cases were excellent, one (Case 20) going through a normal pregnancy and a normal labor afterward. In the third case (41) the anatomical results

¹ Those who may be interested in the tabulated report are referred to the volume of Transactions of the American Gynecological Society for 1900, where the tables will be published in full.

were good, but the clinical were not quite so satisfactory. In a fourth case (25) a perimetritic exudate formed which took some weeks to disappear. In a fifth case (49), a perfectly easy and simple one, the woman was evidently infected by a sore on the house surgeon's finger. She promptly developed a septic peritonitis, which fortunately had a tendency to remain localized to the pelvis. An incision through the posterior vaginal vault on the third day following the operation gave exit to about a pint of turbid serum. The patient made a slow recovery. I have a strong conviction that had the infection taken place in a suprapubic operation the patient would have succumbed to general septic peritonitis. Be this as it may, the case emphasizes the sad experience every operator doing intra-peritoneal surgery occasionally encounters. An uncomplicated, aseptic case is followed by septic peritonitis, which in the majority of cases kills the patient. The cause or the break of a link in the aseptic chain in these instances usually remains a mystery. In the foregoing case it was easily traced, as was also the rather serious infection the writer himself contracted while treating the patient afterward.

The percentage of complications formed by the other 4 cases is no greater (if as great) than would accompany the abdominal route for the same kind of operations.

Anatomical Results.—In only one case (47) was there an absolute failure, the uterus being found in complete retroversion six weeks after the operation. The cause of failure in this instance must be attributed to a very large and heavy uterus in a condition of chronic metritis. In a similar case I would in the future employ an additional uterine fixation suture to reinforce the round-ligament sutures.

In a second case (38) the uterus remained in good position for seven months; the woman then became pregnant, and three weeks later the uterus was found in partial retroversion, in which position it remained until the fourth month, when it ascended above the pelvic brim. Three weeks after delivery with forceps in the seventh month on account of eclampsia, the uterus was found in complete retroversion. The relapse in this case was due to a combination of circumstances:

(a) The malposition evidently had been of very long standing (from the time the patient was in her twelfth year), and probably belonged to the congenital variety.

(b) When the uterus was anteverted the left utero-rectal ligament was in a state of very high tension, showing marked

shortening of it. In a similar condition I would divide the ligament so as to remove the constant backward traction of it upon the uterus.

(c) The occurrence of pregnancy in a poorly developed uterus. The form and size of the uterus was so infantile that I was very much surprised when the patient became pregnant, but not at all so with the behavior of the uterus afterward. At every recurrence of the menstrual period there were violent contractions of the uterus, manifested by labor-like pains threatening a miscarriage. These certainly could not have been due to the results of the operation, for they were already effaced in the third week of pregnancy, as has already been stated.

In a third case (44), one of congenital retroversion with adhesions of the cervix anteriorly, the uterus was in good position five months after the operation. Six months still later the adhesions of the cervix anteriorly were found to have in part reformed, with the result of tilting the body of the uterus backward and bringing about a partial retroversion. The patient, however, was still free from any symptoms, excepting slight bladder disturbances.

Previous to my work with this method I had had such poor results in congenital retroversions of the uterus with every form of surgical procedure that I had grown to look upon the condition as not amenable to surgical relief. But I was having such good results with this operation that I thought I would give it a trial also in congenital retroversions.

This case and the preceding one go to show that it also does not furnish permanent results in that rebellious variety of displacement.

When we take into consideration the anatomical features of congenital retroversion, we cannot be surprised with the failure of most surgical measures. The broad ligaments and the infundibulo-pelvic ligaments are shortened, the uterus is long and narrow, the vaginal portion of the cervix is small and the vagina is short, and both anterior and posterior vaults are shallow. In the shortened ligaments and the shallow vault we have features which act as constant opposing factors to any condition which surgery may create to hold the uterus in a forward position. The only procedure, to my mind, which would be likely to give permanent results would be that which creates a fibrous union of the uterus to the vaginal wall. This

consists in denuding a large area of peritoneum off the anterior surface of the fundus and stitching this to the raw vaginal wall. I know of a case in which this procedure succeeded in the hands of a skilful operator, who had previously failed in the same case with an Alexander operation and a ventrofixation. The serious objection, however, to the method is the difficulties which would surely be encountered on the occurrence of pregnancy. All the cases of dystocia following the old operation of vaginal fixation of the uterus were due to just such a condition of firm and extensive fibrous union of the uterus to the vaginal wall.

If we are permitted to exclude these two cases of congenital retroversion, we would have one failure in 48 cases, or nearly 98 per cent of cures. If they be included, we have three failures in 50 cases, or 94 per cent of cures. The cases for the most part have been subjected to the severest kind of test, for almost all the patients belonged to the poorer classes, who have to perform heavy household duties. One case (?) was subjected to the severest test possible. The woman became pregnant three months after the operation, and six days after labor she was at the bath-tub, and from that day on went about doing her usual heavy housework and taking care of three small children. Now, after the lapse of four years, the uterus is in excellent position.

Period of Observation.—Two cases were under observation for fifty months; 1 case for forty-six months; 1 case for forty-two months; 1 case for forty-one months; 1 case for thirty-seven months; 2 cases for thirty-six months; 2 cases for thirty-four months; 2 cases for thirty-three months; 3 cases for thirty months; 2 cases for twenty-six months; 1 case for twenty-four months; 1 case for twenty-three months; 2 cases for twenty-two months; 1 case for twenty months; 1 case for nineteen months; 1 case for eighteen months; 2 cases for seventeen months; 3 cases for sixteen months; 3 cases for thirteen months; 4 cases for twelve months; 1 case for ten months; 2 cases for nine months; 2 cases for six months; 2 cases for five months; 2 cases for four months; 2 cases for three months; 2 cases for two months; 1 case for six weeks.

Forty-five of the 50 cases were observed for a period varying from four to fifty months, or an average of twenty-two months.

How do the foregoing results compare with those of other methods of vaginal fixation?

Halban,¹ in a recently carefully prepared and elaborate article, gives the results obtained at Schauta's clinic with the various methods as follows:

- (a) Mackenrodt (extraperitoneal), 14.3 per cent cures.
- (b) Dührssen (extraperitoneal), 27.3 per cent cures.
- (c) Dührssen (intraperitoneal), 80 per cent cures.
- (d) Vaginal shortening of the round ligaments (Wertheim-Bode), 76 per cent cures.

It is but fair to state that Halban throws out all cases observed for a shorter period than a year. This standard would make a difference in my percentage, for it would throw out 16 cases observed for a shorter term than twelve months; we would therefore have 33 cures in 36 cases, or a percentage of 91.6.

It can be easily understood why my technique will give better permanent results than the others in which the success of the operation depends upon the weakest part² of the round ligaments and upon a sero-serous union. In the method described in this paper the strongest portion of the ligaments is employed and the union which is formed is a sero-fibrous one.

Further, the uterus is placed in a position more closely approaching the normal than in any other operative procedure in vogue. In ventral fixation the uterus is elevated too high in the abdominal cavity, with the result that it tries to regain its normal cavity—the pelvic. If the abdomen is opened a year or longer after the operation, the original adhesion will be found to have stretched to a mere filamentous band of several inches in length. In a successful Alexander's operation the uterus is crowded up against the pubic bone, with a decided inclination of the fundus toward the one or the other internal ring. Now, while there is a considerable divergence of opinion as to the normal position of the uterus, all will concede that normally it is not placed in the abdominal cavity, up against the anterior parietes, nor partly in the abdomen, up against the pubic bone. Its normal position, all will agree, is in the pelvic cavity, and, in my opinion, with the body and fundus

¹ Festschrift Herrn Prof. Dr. F. Schauta. Beiträge für Geburtshülfe und Gynäkologie, 1900.

² The weakest part of the ligament is that which extends beyond the internal ring. Now, in folding the ligament upon itself there is as much traction upon that portion of the ligament as there is upon the uterine part.

in close contact with the bladder and anterior vaginal wall. This is the position that obtains after a correctly performed vaginal suturing of the round ligaments to the antero-lateral vaginal walls.

These assertions are borne out also by the clinical phenomena following the different operations. In ventral fixation it is common for the woman to suffer from dragging sensations in the lower part of the abdomen until the adhesion stretches and the uterus sinks back into the pelvic cavity.

In Alexander's operation the patients frequently suffer for months from what they describe as a tearing or dragging sensation in both groins. No such symptoms follow the operation which I have here described. Bladder symptoms are uncommon, as the bladder is replaced in its normal position; and when they do occur they must be due to catheterization (carelessly done), which is necessary for the first few days in a fair percentage of cases.

Clinical Results.—To estimate these correctly is exceedingly difficult, as every unbiassed observer well knows. The difficulties are enhanced when, in addition to rectifying the malposition of the uterus, the adnexa have been more or less diseased and have been subjected to surgical measures. How much of the failure or the success in a given case is due to the operative procedures upon the adnexa forms a knotty point to solve.

Again, a woman presents herself suffering from constant backache and we find a retroversion of the uterus. We perform an operation by which the uterus is held in normal position, but the backache still persists. Has the operation been a failure in a therapeutic sense, or have we failed to correctly interpret the condition giving rise to the backache?

As I stated on a former occasion, a great many therapeutic failures, in my opinion, are due to a chronic metritis which persists in spite of the improved position of the uterus. We know by sad experience what a multitude of symptoms may be attendant upon advanced chronic metritis, even when the uterus has never been displaced, and how perplexing a task it is to relieve them. In some cases nothing short of total extirpation of the uterus accomplishes the desired result.

But here we are confronted with another dilemma. What certain means have we of determining the degree of chronic metritis present? I, for myself, frankly confess that I have none. In each case, when I meet with a large, heavy uterus

in retroversion, I am in doubt whether an operation with an anatomical success will also mean a therapeutic success.

A complete cure, in the sense that the woman was entirely free of all symptoms, was effected in 37 cases. In 9 other cases there was an entire freedom of all symptoms pertaining to the pelvic organs. On adding these two series together, which is perfectly just for our purpose, we get 41 cases, or 82 per cent of cures. In 4 cases there was some improvement; the patients suffered less than they did prior to the operation, but they were not entirely free of pelvic symptoms. In 5 cases (10 per cent) there was no improvement whatever manifested.

In 2 cases (23, 45) there was a relapse of the pelvic symptoms in a minor degree some months after the operation. These readily disappeared after a few applications of pelvic massage.

These two experiences, I think, furnish us with a finger-post in pelvic therapeutics. It seems to me that at the present day we are inclined to expect too much from surgical procedures unaided by other means at our command. In a given case of a large, subinvolved uterus in retroversion or flexion, with moderate adhesions and slight pathological changes in the adnexa, is it not expecting too much to bring about a *restitutio ad integrum* by a mere anchoring of the uterus in a forward position and excising the diseased structures?

He who has the courage to tell his patient that the operation he proposes is only one means to the desired end—a perfect cure—and that some after-treatment may be necessary, will, in my opinion, cure (in the proper meaning of the term) the largest number of his patients.

Pregnancies and Labor following the Operation.—Three cases (2, 3, 20) went through normal pregnancies and had easy labors.

A fourth case (31) is in her ninth month of pregnancy, which has so far progressed very favorably, and, as the cervix is in normal position, there is every reason to anticipate an easy confinement.

Case 38 cannot be reckoned here, as the uterus in the third week of pregnancy went back into retroversion. The case has already been put down as an anatomical and therapeutic failure. The subsequent events in the case have no bearing upon the results of the operation, as has already been explained.

These four cases are too few in number to justify a positive

opinion as to the effects of the operation upon gestation and parturition. As far as they *do* go they show that the original conception,¹ that the method would not create a condition which would act unfavorably upon those physiological processes, was correct. The question must still remain *sub judice* until a greater number of cases of pregnancy and labor have been observed. One point in this connection, however, must be emphasized at the present time, and that is: The labors of the three cases (two attended by the writer himself) could not have been more easy and normal in every respect.

Indications.—The operation is indicated in the following conditions:

1. In all cases of mobile retroversions and flexions of the uterus in which a surgical procedure, for one reason or another, may be deemed necessary.

2. In the same conditions when they are associated with prolapsus uteri of the first and second degrees.

3. In all cases of adherent retroversions and flexions in which the uterus only is adherent.

4. In cases of retroversions and flexions associated with moderate disease of the adnexa, such as cystic ovaries, catarrhal salpingitis, hydrosalpinx and hematosalpinx and pyosalpinx, when the latter is of moderate size and not too firmly and extensively adherent.

5. It is the operation of predilection in women with thin, lax abdominal walls which would offer a poor support for the uterus. The same applies to the extreme opposite condition, *i.e.*, in women with very fat abdominal walls in whom a suprapubic operation constitutes a very serious affair.

Contraindications.—It is contraindicated in the following conditions:

1. In congenital retroversions.

2. In retroversions and flexions when the broad ligaments are very much infiltrated and shortened by inflammatory disease.

3. In retroversions and flexions associated with very marked and extensive disease of the adnexa, and also when the adnexa are less diseased but are very firmly and extensively adherent.

4. In complete procidentia where there is a veritable hernia of all the pelvic organs.

¹ For full course of reasoning on this point see article, "Further Experience with Vaginal Fixation of the Round Ligaments for Backward Displacement of the Uterus," Trans. Amer. Gyn. Soc., 1897.

5. In some rare cases of nulliparæ in which the vagina is very deep and narrow.

6. In cases in which, in addition to the pelvic lesions, there are evidences of disease higher up in the abdominal cavity, as, for instance, chronic appendicitis.

751 MADISON AVENUE.

RETRODISLOCATION OF THE UTERUS.¹

BY

R. S. HILL, M.D.,

Counsellor of the Alabama State Medical Association, Montgomery, Ala.

To facilitate the understanding of the etiologic factors in any displacement of the uterus, and to be better prepared to choose the best means for replacing and maintaining the organ in its normal position, we should know its anatomy. I will, therefore, preface my remarks on retrodeviation of the uterus by mentioning a few anatomic facts relative to the position of the organ.

The uterus is normally inclined forward, its body resting lightly on the posterior and upper surfaces of the bladder. In regard to its supports, the intra-abdominal force is probably one, if not its chief; but, for the purpose of elucidating the views I wish to present on the important or main question to be treated in this article, the surrounding bed of cellular tissues and the three pairs of ligaments, anterior, posterior, and lateral, are of more importance. The anterior or round ligaments begin, one on each side, from the anterior lateral borders of the uterus, just below the level of the Fallopian tubes, and pass forward, upward, and outward through the inguinal canals. They are quite lax, but serve materially in preventing the fundus from turning backward into the hollow of the sacrum to a pathologic degree. They are more restraining than supporting bands. The posterior or utero-sacral have practically a common origin from the posterior surface of the isthmus uteri: running backward and upward, they diverge, forming the lateral boundaries of the posterior cul-de-sac, and are inserted one to each side of the second and third sacral vertebræ. They hold the uterus, at the point of their origin, posterior to a vertical line drawn through its fun-

¹ Presented to the Southern Surgical and Gynecological Association.

dus. The upper portion of the uterine body is, as it were, tilted forward. The broad ligaments pass from the uterus to the lateral surfaces of the pelvic cavity and are more or less twisted in retroversion and retroflexion.¹

The cellular tissue is in great abundance at the sides and in front of the uterus, but to a less extent posteriorly; forming an elastic bed for the organ laterally and for its anterior and posterior surfaces at the level of the internal os.

I am also of the opinion that the attachment of the bladder to the pelvic wall assists, indirectly, in sustaining the uterus, by preventing the fundus from sagging or being forced by intestinal pressure downward anteriorly to an abnormal degree.

Notwithstanding the uterus in the adult being slightly ante-flexed, the character of its tissue has a tendency to prohibit further flexion; hence the anterior and posterior mobility of the organ, which is necessarily considerable, not only for the proper discharge of its function, but the function of the bladder and rectum, is aptly described, if I may use the expression, as normal versions.

Wherever there is as much motion as with the uterus, there is a predisposition to dislocation, and, from our knowledge of the anatomy of the parts, we would naturally expect backward luxation of the uterine body to be, as it is, the most frequent variety of pathologic displacement. All things, however, being normal—I use the expression in its broadest sense—Nature's provisions, the principal ones being those mentioned, are sufficient to prevent uterine dislocation. What, then, are the departures from normal that permit retrodeviation of the uterine body to the pathologic degree? The answer is, primarily, lengthening and loss of tone of the ligaments, and, secondarily, change in the structure of the organ at or near the level of the isthmus. The upper end of the uterus cannot go into the hollow of the sacrum without the round ligaments being stretched; nor can the cervix pass forward, as it does in retroversion—which constitutes by far the majority of retrodisplacements (348 retroversions to 55 retroflexions, Mundé, International Medical Congress, 1881)—without the length of the utero-sacral ligaments being increased; and, lastly, the broad ligaments cannot be twisted, as they are in retrodisplacement, without being lengthened.

¹ The term used in this article expressive of backward dislocation of the uterus refers to retroflexion and retroversion.

In regard to the change in the structure of the uterine tissue, I am inclined to the opinion that it is invariably the result of retroflexion and not the lack of development. I do not, however, maintain that this is equally true when applied to ante-flexion, because the condition of the anterior wall of the uterus, at or near the level of the internal os, is different from that of the posterior during the developmental stage of the organ.

This brings us to the causes of the departure from normal and the manner in which they act.

1. A general weakness shared by the pelvic structures and caused by faulty development or lack of maintenance of the physical forces. Here we have the pelvic, in common with the other tissues of the body, subnormal in point of strength.

2. Sudden tensions on the ligaments, as caused by jolts and jars.

3. The wearing of corsets or other constrictions around the abdomen, particularly before development is complete, forcing a large part of the intestines into the pelvic cavity, thereby transferring their pressure from the posterior surface of the anterior abdominal wall to the uterus.

4. Neoplasms of the uterus or other pelvic tissues, adding to the task of the ligaments either by pressing against the organ or increasing its weight.

5. Subinvolution. During the growth of the pregnant uterus there is an increase in the length of its ligaments, which increase remains proportionately to the absence of perfect involution. Therefore in these cases there is not only an imperfectly resilient and over-heavy uterus, but abnormally relaxed ligaments. The importance of subinvolution as a cause of retrodisplacement is somewhat indicated by the statistics presented to the International Medical Congress in 1881 by Mundé, viz., of 400 retrodisplacements, only 5 were nulliparæ.

6. Endometritis and metritis, by augmenting the weight to be sustained and impairing the resiliency of the uterine tissue.

7. Peritonitis, forming adhesions which may draw and bind the uterus in the hollow of the sacrum.

8. Inflamed appendages falling in the posterior cul-de-sac and dragging on the uterus.

9. Destruction of the tone of the posterior vaginal wall, without tearing the sphincter ani muscle; resulting in the formation of rectocele, which drags upon the uterus in the axis of the outlet of the vagina.

10. Inflammation of the cellular tissue and abnormal distension of the rectum and bladder. If atrophy of, or cicatrix in, the cellular tissue in front of the uterus drags the cervix forward, or if the rectum is frequently and abnormally distended so as to force the cervix anteriorly, the axis of the uterus will be changed and may be brought in a more or less vertical line, and then, by frequent and excessive distension of the bladder, the fundus may be driven backward and posterior to the vertical line, permitting the intestines forced from the abdominal cavity to press upon the front instead of the back surface of the uterus. Thus the strength or tone of the ligaments may be overcome by the constant tension, and the body of the organ permanently turned backward into the hollow of the sacrum. It may be said that an excessive distension of the rectum will, by more or less filling the hollow of the sacrum, prevent the fundus from occupying this position—and so it will; but after the tone of the utero-sacral ligaments is destroyed and the axis of the uterus changed, its body may be forced backward during any period that the rectum is empty.

The part attributed to atrophy of, or cicatrix in, the cellular tissue in front of the uterus and to the rear of the bladder, may be questioned. I am, however, firmly of the opinion that it not only may serve in the manner indicated, but may, by destroying the elasticity of the rear wall of the bladder, increase the necessity for abnormal distension of its upper wall, against which the upper end of the uterus rests, and thereby make more decided as well as more constant the tension on the round ligaments.

We are now confronted with the question of treatment. Though retrodeviation is an abnormal position, it does not always impair or disturb the comfort of the patient. It is impossible to even approximately determine the per cent of cases that are symptomatically manifested. Being, therefore, deprived of the only true means of estimating the importance of interference as a preventable measure, it is quite a question with me as to whether efforts should be made to correct the abnormality in the absence of symptoms. I would have no hesitancy in declaring in favor of interference were the means at our command more satisfactory. When the condition is symptomatically manifested, that something should be done for its correction does not admit of question. Interference having been decided upon, either as a necessity or through expediency, our first efforts should be directed toward the

removal of the etiologic factors. The means for accomplishing this are more appropriately discussed under the treatment of the respective pathologic conditions. I shall, therefore, leave this part of the subject untouched, except to the extent of briefly commenting on the management of adhesions and cicatricial tissue.

When the body of the uterus is fixed in an abnormal position, I believe the adhesions must be thoroughly destroyed, not stretched, before the organ can be returned to and maintained in its normal position. For the destruction of the adhesions the abdominal is preferable to the vaginal route, because it exposes the tissues to view, enabling us not only to determine with more accuracy the extent of the existing pathologic conditions, but to incise with thoroughness false bands that could not be reached through the vagina, or, if reached, only destroyed at an increased risk of injuring other structures; and, again, in cutting through the vagina the pair of utero-sacral ligaments, the continuity of which is important, will in a large per cent of cases be bisected.

When the change resulting from inflammation of the cellular tissue between the uterus and the bladder draws the cervix forward, our efforts should primarily be directed toward overcoming this condition. By repeatedly and forcibly carrying the cervix backward this can usually be done. It may, however, require a number of "sittings," but the advantage derived from a successful issue will be ample compensation for the time and trouble expended. Rarely, I think, will an incision in front of the cervix be required to overcome the force of the new tissue.

Though the methods proposed for maintaining the uterus in its normal position are numerous, with few exceptions they are all based on the single principle of restoring the function of one or more of the ligaments. The pessary presses on the utero-sacral ligaments and adjoining tissues, thereby drawing the cervix backward and tilting the body forward. This instrument frequently serves our purpose admirably, but it is objectionable because it is a foreign body and is not curative. I have had a few cases in which, after using the pessary for a time, the uterus remained in its normal position without artificial support. These were invariably cases due to subinvolution, and I consider the treatment applied to this condition the curative measures of the retrodeviation, though the pessary was an important adjunct. Until some satisfactory way is

devised for shortening the utero-sacral ligaments, I do not expect to abandon the use of the pessary. I do not think it is indicated in retroflexion, because in this condition the fault is not in the utero-sacral bands, but in the posterior uterine tissue at the level of the isthmus and in the round ligaments. When used in retroflexion the upper bar of the pessary fits in the concavity formed by the bending of the uterine body on the cervix, and does no good. The operation of entering the posterior cul-de-sac and using packs to force healing by granulation has for its purpose the shortening of the utero-sacral bands by causing the formation of cicatricial tissue. Pryor speaks favorably of the procedure, in the absence of pus, where the body is adherent to the hollow of the sacrum. In my opinion the operation has only a limited application. In non-adherent cases it cannot take the place of the pessary, nor do I think it is an operation of election when the body is fixed in an abnormal position. Only when the cul-de-sac is opened for the purpose of drainage would I apply the method.

In 1838 Kelly undertook to shorten the utero-sacral ligaments by passing a ligature from within, on each side of the rectum, and then through the cervix at the level of the isthmus. This operation has not received a place in surgery.

Of the methods for shortening the round ligaments I prefer Alexander's. I have resorted to it a number of times and have never failed to find the ligaments. I cannot, however, say that they are always present, but believe when they are absent it is an anatomic curiosity. I do not lay open the inguinal canals, and have never had a hernia as a sequel, but know that it does in a small per cent of cases follow the operation, because of the report of competent surgeons. It is said that occasionally the ligaments cannot be drawn out because they are adherent to the surrounding tissue by cicatricial bands caused by past inflammation. I have never seen such an instance. In some cases the round ligaments are very small and occasionally fail to sustain the uterus; this has occurred once in my practice. It is my opinion that when they give way after being shortened, the fault is not so much in them as it is in our failure or inability to place on the utero-sacral ligaments that part of the burden which belongs to them. If we could shorten the utero-sacral ligaments as satisfactorily as we can the round, and at the time that Alexander's operation is performed, I believe we would have for the correction of all retroversions a perfect surgical

technique. In short, our defect is not in dealing with the round ligaments, but the utero-sacral. Until a better method is devised for shortening the lengthened utero-sacral bands, Alexander's or any other operation that shortens the round ligaments puts them in a state of constant tension and will be followed by some failures, because the normal function of the round ligaments is not to resist constant force, and therefore their structure is not always adequate for such services. If I properly comprehend Alexander's operation, it is not to convert the round ligaments into the principal uterine supports, but to restore their normal function of limiting the backward movements of the upper end of the uterus. While, therefore, it is, in my opinion, an ideal operation for retroflexion, it needs to be assisted in retroversion by some measure which shortens the utero-sacral ligaments, thereby restoring their function. Though I have had no experience with any of the operations for shortening the round ligaments through the vagina, I do not like them, because they impress me as being radically wrong in principle. The shortening of the round ligaments in the abdominal cavity cannot take the place of Alexander's operation, for the reason that they have an element of danger that is absent in the latter—viz., opening the peritoneal cavity; and unless they increase the physical endurance of the round ligaments, which I think is doubtful, they are no better substitutes for ventrofixation than is Alexander's operation.

Vaginal fixation of the uterine body deserves nothing but condemnation. When it is necessary to open the abdomen the majority of surgeons do ventrofixation. I have done the operation a number of times, but never without feeling that it was a confession of surgical imperfection. If in performing its normal function the uterus did not undergo such marked changes in size, I could find no objection to making a false band of non-elastic tissue from its fundus to the anterior abdominal wall; when, however, I recall that the top of the non-impregnated uterus does not occupy a level above the pubis, whereas pregnancy causes the fundus to rise above the umbilicus, I am forced to the conclusion that such a band as is formed by ventrofixation will either give way during, or check the progress of, pregnancy. Far from perfect is any operation that interferes with the function of any organ, though it restores the organ to its normal position. There are reported instances of normal confinement after ventrofixation followed by retention of the uterus in its normal position. In these

cases it is my opinion that the false band gave way, but the physiologic activity incident to the pregnancy caused a restoration of the normal uterine support. While believing ventrofixation to be unscientific and illogical in principle, I recognize, in the probable absence of something better, the advisability of resorting to it in old retroversion with adhesions, long utero-sacral and small round ligaments.

In retroflexion efforts have been made to overcome the evil resulting from the change in the structure of the uterine tissue at the point of flexion, by removing a transverse plug from the opposite wall. I do not think any good is to be derived from such procedures. I had rather depend on Nature restoring the normal condition of the tissue, subsequent to the pressure being removed, by drawing the fundus forward.

21 SOUTH PERRY STREET.

THE REMOTE RESULTS OF CONSERVATIVE OPERATIONS ON THE OVARIES AND TUBES.

AN ANALYSIS OF EIGHTY-FIVE CASES.¹

BY

W. L. BURRAGE, M.D.,
Boston.

By conservative operation is meant an operation performed on the diseased uterine appendages which has for its object the preservation of function, a conservation of one ovary, or of a portion or portions of one or both ovaries with their tubes, or as much of the tube or tubes as is reasonably normal in appearance.

In a valuable paper read before this Society in 1887 Dr. W. M. Polk asked the question, "Are the tubes and ovaries to be sacrificed in all cases of salpingitis?" He answered it in the negative, and urged the advisability of breaking up adhesions and restoring a retroverted uterus with the displaced ovaries and tubes to a normal position by Alexander's operation or other means in cases of moderate severity, in place of removing both tubes and ovaries. He reported 50 cases, treated in this manner, in *THE AMERICAN JOURNAL OF OBSTETRICS* for 1891,

¹ Read before the American Gynecological Society, at Washington, D. C., May 1, 1900.

and in a further paper, also read before this Society in 1893, on "Operations upon the Uterine Appendages with a View to Preserving the Functions of Ovulation and Menstruation," he reported 28 other cases treated conservatively—that is, by opening closed tubes, washing them out and approximating the outer and inner surfaces, and resecting diseased ovaries, leaving only relatively normal tissues. You are, of course, familiar with these papers, and I only want to refresh your memories by a brief summary of the results.

Of 50 cases, 48 recovered and 2 died; 38 reported favorable results, 7 reported bad results, and 5 were unknown; 38 cases were seen and examined after not less than one regular menstrual period after operation, and 30 at periods ranging from six months to three years after operation. Out of 78 cases reported—*i.e.*, the 50 above and the 28 just referred to—4 became pregnant. In only one of these had a closed tube been resected, and that was not a pus tube, but a case of hematosalpinx where an inch of the tube had been left.

Dr. A. Palmer Dudley, who began to do this sort of operating shortly after reading Dr. Polk's paper, has published several articles giving the results of his work, the latest being "A Further Report upon Conservative Surgery of the Uterine Appendages," published in the Transactions of the American Gynecological Society for 1898. In it he gives a series of 103 conservative operations upon the uterine appendages without a death, and advocates conservative operations in cases of gonorrheal pelvic infection of extreme character. Out of 65 cases reported by the same author in 1897,¹ pregnancy was recorded as taking place subsequent to operation in 10, but no case was reported in which pregnancy resulted after opening or amputation of a pus tube.

Following in the footsteps of such eminent leaders, I have done conservative operating since 1892 and have kept full notes of all my cases, with the purpose of some time reporting the results, hoping in this way to be able to throw a little light on the problem of when to do conservative operations.

At the outset I have to apologize for not presenting the pathological reports on each portion of ovary and tube removed. In some of the earlier cases there were no reports made, and in others I have not had the opportunity to get them from the hospital records, so that many of the diagnoses are purely clinical.

¹ THE AMERICAN JOURNAL OF OBSTETRICS.

Classing as conservative operations all those in which, an operation on the appendages being performed, not including suspension of the ovaries, one ovary, a portion of one ovary, or one tube or a portion of one tube was left behind, my cases up to March 1, 1900, number 137. Two of these died as a result of operation—one an early case of colpotomy in which there was a secondary hemorrhage, my only case of the kind, and the other a case of septic ectopic pregnancy.

It has seemed to me best to consider only those cases concerning which reliable information could be obtained at least a year after operation, for I think that as a rule we cannot form a satisfactory opinion as to the remote results of this class of operations before that amount of time has elapsed.

We will inspect the records of all the cases operated upon previous to March 1, 1899, 104 in number. Nineteen of these it has been impossible to trace or the patients have been under observation for periods of less than a year, making the total number of cases analyzed 85. These 85 have been divided into two classes—the more severe and the less severe. The more severe include all those where there was pus present in tube or ovary, where tubes and ovaries were extensively diseased and abundant adhesions were present. The less severe are those where there were moderate or mild degrees of inflammation of tubes and ovaries and few adhesions or none at all.

Analyzing first the more severe cases, 41 in number, we see that the average age of all the patients was 29 years: 35 were married and 6 single. Of the married, 26 had been pregnant previous to operation and 9 had been sterile. Clinical gonorrhea was noted as being present previous to operation in 9. It may be well to state that the clinical diagnosis of gonorrhea was made from a history of dysuria and purulent vaginal discharge; where present, from a history of gonorrhea in the husband or of ophthalmia neonatorum in the children, and from the appearance of the urethra, vulva, and vagina; a red-dened meatus with a purulent secretion either in the urethra or Skene's glands, stricture of the urethra and urethritis and cystitis, inflammation of Bartholin's glands and purulent vaginitis. In a very few instances search was made for the gonococcus.

Syphilis was noted as being present in 4, and the pelvic symptoms followed difficult labors or abortions in 18.

There was no case of malignant disease reported, and my records show nothing as to the frequency of tuberculosis.

In estimating the patency of the canals of the tubes a probe was passed through the ostium abdominale in every case when open, and in many cases an attempt was made to pass a fine probe through the narrow part of the canal in the isthmus into the uterus, but generally without success. The statistics have reference to the condition of the ostia abdominalia, and, of course, it does not necessarily follow that when the ostia are noted as being patent the inner portions of the canals were also open.

The ostia of both tubes were found to be closed in 21 and both open in 8, one was open and the other closed in 10, and one was closed and the other not seen in 2 (colpotomies).

Statistics as to the operations performed show that the right ovary was removed 18 times and was resected, including the puncturing of cysts, 9 times. The left ovary was removed 17 times and resected 10 times. The right tube was removed 19 times and resected 7 times, and the left tube removed 18 times and resected 7 times. The appendix vermiformis was removed twice.

As to remote results, all the patients were seen or heard from at least a year after operation. The longest period of time was seven and a half years, and the average time for all was two and three-quarter years.

Symptomatic cure was noted in 28; symptoms not relieved in 13. Anatomical cure (ovaries and tubes normal to feel) in 17; anatomical condition not good (some enlargement or prolapse of ovaries and tubes) in 14; anatomical condition unknown in 10.

Four cases became pregnant after operation, and one of these twice. The one who had two pregnancies had a tubo-ovarian abscess on the right side, following an abortion six months before; the right tube and ovary were removed entire; the left ovary was cystic and the cysts were punctured; the left tube was normal. Of the 3 remaining cases, one was an acute rupture of an ectopic pregnancy at two months; the left tube and sac were removed and there was a pelvic abscess following; the other tube and ovary were normal; abortion at six weeks three years later. The second was a case of acute salpingo-oöphoritis of mild grade with retroversion, probably gonorrheal; patent tubes; the tubes were washed out and the uterus suspended; normal labor fourteen months after operation. The third was a case of retroversion with large cystic ovaries in a woman with a phthisical

history; tubes normal; the left ovary and tube were removed together with two-thirds of the right ovary, and the uterus was suspended. There was extensive post-operative infection of the pelvis in this case, with a resulting pelvic abscess and fecal fistula, abdominal and vaginal drainage. Two years later the patient had a normal pregnancy, except for some pains in the early months caused by the dense adhesions between the fundus and the parietes. The labor was normal and the uterus in position and the pelvis free subsequently.

All four had had children before operation. There was a suspicion of the presence of gonorrheal infection in all, but the clinical signs were not characteristic. The ectopic-pregnancy case had a child of 6 years who was treated for purulent vulvitis soon after her mother's operation.

Of 17 cases of resection of one or both tubes, both being closed at the time of operation—these 17 representing all the patients who were married and had not become widows, or, as far as known, had not used measures to prevent conception since operation—none became pregnant.

My plan in resecting the tubes has been to slit open the convex portion of the ampulla by a good-sized longitudinal incision, or to amputate the diseased portion and then form a new ostium by stitching the lining mucous membrane to the peritoneum covering the tube by interrupted stitches of intestinal silk, taking care to roll out the mucous membrane as much as possible. On opening the tube it is stripped of its contents by massage with the fingers, the contents being caught on a gauze sponge, which is thrown away. In some cases the cavity of the tube has been irrigated with salt solution, and in others not. After the new ostium has been formed, the free end of the tube is attached to the ovarian ligament by a stitch of catgut through the mesosalpinx.

I have generally resected the ovaries by splitting them longitudinally on their convex border nearly to the hilum, and have then excised the diseased portion and punctured and enucleated cysts. The incision in the ovary is closed with a lock stitch of fine catgut passed deeply to prevent its cutting out.

In removing tubes it has been my aim to remove the entire tube, taking a V-shaped piece out of the uterine horn and closing the raw surface by a continuous catgut suture. In some of the early cases in the lists the tubes and ovaries were tied off with the mass ligature of silk about a pedicle.

To estimate the probability of subsequent pregnancy among patients subjected to conservative operations for severe grades of inflammation of the ovaries and tubes where at least one tube is found to be patent at operation, we must subtract from those in the list who had one or both tubes open, the single women and those who have since become widows, and also those who admitted that they had taken measures to prevent conception, and we must add one who has since been married. This foots up 17 cases, of whom 4 became pregnant, or one in every four and a quarter cases. In other words, $23\frac{1}{2}$ per cent of this class of cases became pregnant.

Examining the less severe cases, 44 in number, we find that 29 were married and 15 single, and the average age was 26 years. Of the married, 22 had been pregnant before operation and 7 sterile. Clinical gonorrhea was noted as being present in 4 and syphilis in 2, and the symptoms followed difficult labors or abortions in 7. Both tubes were closed in only 1 case. Cultures from these tubes, by the way, show no gonococci and no bacteria.

One tube was open and the other closed in 3 cases. The right ovary was removed twenty times and resected fourteen times. The left ovary was removed twelve times and resected thirteen times. The right tube was removed thirteen times and resected once, and the left tube was removed ten times and resected once. The appendix vermiformis was removed three times.

Looking at the remote results, we see that the patients were seen or heard from between one and five years after operation, the longest period being five years and the average time two and a fifth years. Symptomatic cure was recorded in 32 instances and symptoms not relieved in 12; anatomical cure in 16, anatomical condition not good in 10, and unknown in 18.

Pregnancy occurred in 11, and in one of these twice. At least one tube was normal in all who became pregnant. All but 2 had had previous children or abortions. In no instance was gonorrhea suspected and in none were there signs of gonorrhea.

Deducting from the list of 29 married women those who have been through subsequent hysterectomies, those who have become widows or have taken measures to prevent conception, and adding 1 who has been married, and we have left 25, of whom 11 have become pregnant, or one in every two and a quarter cases as representing the probability of subsequent

pregnancy after conservative operations on cases of less severe disease of the ovaries and tubes. Expressed in percentages, 44 per cent of this class of cases became pregnant.

It would appear from a comparison of the two classes that there were more married women and slightly older women in the more severe than in the less severe list; that gonorrhea and syphilis were more prevalent, and that the symptoms had resulted more frequently from difficult labors and abortions among the more severe; also, that the tubes were closed in a large majority of the more severe, whereas they were open in all but one of the less severe.

As to the number of operations performed on the appendages on each side of the body, taking both classes together, it appears that there is next to no difference; the right ovary and tube were removed or resected very slightly more often than the left ovary and tube, negating a common notion that ovarian and tubal disease is more commonly found on the left side. The symptomatic and anatomical cures and failures to cure were approximately the same in both.

When we come to the resulting pregnancies there is a marked difference—4 for the more severe as against 11 for the less severe. This showing is what we should expect, for, with extensive disease of ovary and tube present, it is natural that the reproductive function should be more impaired, other things being equal. It is to be noted that all of the cases of subsequent pregnancy in both tables, except two of the less severe, had had previous pregnancies, so that, as far as my cases go, conservative operations on the ovaries and tubes hold out far better prospects in this respect to the parous women than to the sterile. The tables show that 35 per cent of those who had previously borne children became pregnant after operation, and only 5 per cent of the previously sterile.

The more severe cases represent especially the plastic operations on the tubes, the tubes being resected fourteen times as compared with twice for the less severe cases. It is disappointing to find that none of the patients whose tubes were so carefully patched up should have become pregnant. I have had no opportunity at a subsequent operation to see a tube which had been resected, so that I can say nothing as to the continued patency of such tubes.

The immediate effect of the conservative operations does not properly come within the scope of this paper; however, it may not be amiss to say that, as far as my observation goes, the

convalescence is as good as it is where both ovaries and tubes have been removed, and often less stormy, because the patient is spared the distressing nervous symptoms of the suddenly induced menopause.

I have several times noted a subsequent enlargement of an ovary which had been resected for cystic disease, this enlargement persisting often for several months, so that I was led to wish that I had removed the entire ovary. In most cases this enlargement has disappeared in the course of time, but in a small number of cases of ovaries which were riddled with small cysts the increase in size has been permanent.

Out of all the 85 cases, in only one case, a syphilitic, was another operation necessary because of such subsequent enlargement of an ovary resected for cystic disease. In 3 instances in which one ovary was removed and cysts were punctured in the remaining ovary because it was cystic, another operation was required. In 7 other cases a remaining ovary, cystic at the time of operation, was later noted as being large, although causing no ovarian symptoms.

In 5 cases of the extensive purulent inflammatory type, all of them gonorrheal and 3 of them syphilitic, one ovary and tube being removed in each case, the remaining ovary became diseased following operation, and another operation was indicated, although as yet only one of these patients has actually submitted to operation.

In 2 of my early cases, both gonorrheal, a diseased ovary was left in the bottom of the pelvis, in one case after the removal of the sac of an ectopic pregnancy, and in the other after the removal of a pus tube. Both of these women have been sufferers since their operations, six and seven years ago respectively, but have not been willing to undergo another operation.

Anatomical cure was recorded in 33 out of 57 cases who came under observation.

Symptomatic cure was recorded in 60 out of 85; but from the complexity of the symptoms in many, from the fact that a large number of the patients were pronounced neurasthenics, and the inherent difficulty in determining in this class of cases the relative importance of disease of the uterine organs and disease of the nervous system and in properly assigning the symptoms to each, we are not to attach too much importance to these figures.

In the small number of cases where the tubes have been resected and the pathologist has reported the portions removed as showing evidences of tuberculosis, I have noted no subse-

quent tubal disease, but my observations on this point do not cover enough cases or a long enough period of time to be at all conclusive.

Several of the unsuccessful cases have been women over 35 years old with extensive, long-standing tubal and ovarian disease; and it would seem that it is less desirable to subject such cases to conservative operations than the younger women with the same trouble, for at this time of life the patient is suffering not so much from the ovarian and tubal affection as she is from the long-continued effects of it. There is little chance that the uterine organs, diseased for many years, will be able to regain an approximately normal condition in the remaining years of functional activity, both because of the limited time and because the reparative powers of the system are less vigorous than at an earlier age. Therefore these patients either need no operation at all or they need an operation which will eliminate entirely the ovarian function, thus doing away with monthly pain and discomfort, an additional burden to an already jaded nervous system.

From the foregoing analysis the following conclusions would seem to be justified:

1. It is advisable to do conservative operations in all cases where the ovaries and tubes are not hopelessly diseased in all parts of their structure, except on patients who are near the menopause, on patients who have pronounced gonorrhea of long standing, and on the rare cases of malignant disease.

2. When a patient is near the menopause (over 35 years of age) and has ovarian or tubal disease of any considerable degree of severity, it is generally wiser to perform complete removal, with or without hysterectomy according as the uterus also is diseased or not.

3. In cases of well-marked gonorrhea of long standing, especially if the patient is constantly exposed to reinfection, if both tubes are seriously diseased and closed, total removal with or without hysterectomy is the operation of choice.

4. In certain cases of this class where the patient thoroughly understands the likelihood that another operation may be necessary at some future time, and wishes to take the chances in the hope of preserving the function of menstruation, conservative operation is permissible.

5. If one tube is patent and healthy in appearance and there is enough healthy ovarian tissue to preserve, a conservative operation ought to be performed even in the presence of gonorrhea.

6. With present methods of performing resection of the

tubes, if both tubes are found closed at the time of operation subsequent pregnancy is not to be expected.

7. In severe grades of inflammation of the appendages, irrespective of causation, if the ostium abdominale of one tube is patent, the prospect of subsequent pregnancy after the preservation of a portion of ovary is about one in four and a quarter, or $23\frac{1}{2}$ per cent.

8. In the less severe grades of inflammation, under similar conditions of tube and ovary, the prospect of subsequent pregnancy is about one in two and a quarter, or 44 per cent.

9. In women who have borne children, in both classes, subsequent pregnancy may be expected in 35 per cent, whereas in the previously sterile it may be looked for in only 5 per cent.

10. If it is necessary to remove both ovaries it is of no advantage to preserve any portion of tubal tissue; but, except under the conditions just enumerated, some ovarian tissue should be preserved in every case.

317 MARLBOROUGH STREET.

REPORT OF TWO CASES OF EPITHELIOMA OF THE VULVA.¹

BY

CHARLES P. NOBLE, M.D.,
Philadelphia, Pa.

(With plate.)

I REPORT these cases because of the comparative rarity of the condition. My entire experience with epithelioma of the vulva consists of 4 cases, 3 of which were operated upon; 1 was inoperable when first seen. Of the 4 cases 3 are now dead. The fourth case made a good recovery and in a year after operation had had no recurrence.

I think this is about the usual experience—namely, that after operation cancer of the vulva recurs promptly, the glands in the groin being usually involved, and the patient dies as a consequence of the recurrence.

It seems to me that this ought not to be the case, provided

¹ Read before the Section on Gynecology, College of Physicians of Philadelphia, April 19, 1900.

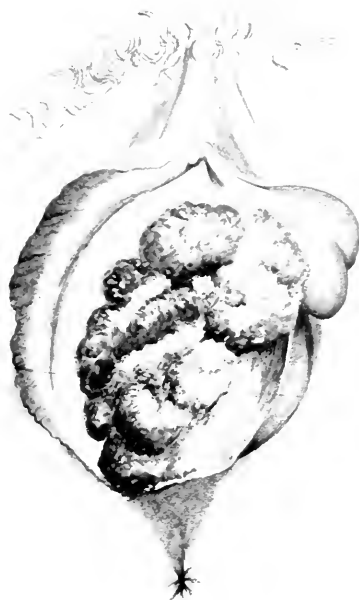


FIG. 2.



FIG. 1.

we could get hold of the cases reasonably early. All of the cases which I have seen had existed for a long time when they came under my observation, and in none of the cases did I think there was any prospect whatever of radical cure at the time operation was done. If we could have these cases early, I see no reason why the prognosis should not be good if a radical operation is done. If cancer of the vulva, which is usually epithelioma of the vulva, came under my care at an early period, I should not only resect the vulva, but would dissect out a sufficient portion of the skin and fatty tissue about the groin to get the chain of lymphatics from the vulva up to the groin. In other words, I would do just such an operation in this region as we do for cancer of the breast, and if that were done I see no reason why we should not have a fair percentage of permanent cures.

The reason for these cases coming into the surgeon's hands late, apparently, is that in the beginning of epithelioma of the vulva the condition is apparently such a slight trouble that women are slow in consulting their family physician; and they have, so far as I know, been equally slow in advising operation for these cases. If we can overcome this difficulty it seems to me that the prospects will be better in this class of cases.

As illustrating the comparative rarity of this condition, I recall that some years ago, when Dr. Hirst reported a case of this character to the Society, none of the members present had ever seen one, although most of the operating gynecologists in town were present. Shortly afterward I saw two, and the two cases which I report to-night I operated upon on the same day.

The first case occurred in an old lady aged 63, who noticed first a small sore about the vestibule. This had progressed slowly, and when the case came under my observation there was an eaten-out ulcer involving the vestibule and extending around the orifice of the vagina close up under the urethra. In addition to this ulcer the vulva was much congested, giving the appearance shown in the drawing (Fig. 1). I excised the vulva and lower half-inch of the vagina and the outer end of urethra, and stitched the skin external to the labia majora down to the urethra and approximated it to the vaginal mucous membrane. Primary union was not obtained, but the wound healed, after a few weeks, by granulation. It is nearly two years since the operation and there has been no recurrence.

The other case was in a much younger woman, about 30. In

this case the epithelioma had appeared first as a small sore on one labium minus and continued to grow, until when it came under my notice it was a typical epithelioma blocking up the orifice of the vagina (Fig. 2). In addition to the epithelioma there was a deposit in the left groin already sufficiently extensive to show that the deep vessels were involved, so that any attempt at a radical operation would have combined the ligation of the iliac artery and vein and probably the amputation of the thigh. Under the circumstances it did not seem advisable to attempt a radical operation, so that simply the left half of the vulva was excised with the object of getting rid of the secreting surface of the epithelioma, which was annoying the patient because of the foul-smelling discharge. The patient recovered promptly from the operation and in a short time returned home. Soon after this the secondary growth in the groin began to give trouble and the patient died within a few months.

In both cases the specimens were examined microscopically, with the report that the condition present was epithelioma. I was inclined to think the condition in the first case was tubercular. The progress of the ulcer was so slow, although it had existed for nearly two years, that it was rather difficult to believe that it was an epithelioma.

As I said in the beginning, my object was to bring two examples of this rare condition before the Section for record, and also to speak theoretically concerning the radical treatment of cancer of the vulva in view of these cases coming under our notice at an early period.

1509 LOCUST STREET.

HERNIA IN CHILDREN.¹

BY

EDWARD A. BALLOCH, M.D.,
Washington, D. C.

HERNIA as it occurs in children differs from the adult form principally as to its character and management, and therefore deserves the separate consideration usually given to it. In

¹ Read before the Washington Obstetrical and Gynecological Society, January 3, 1900.

this communication the term "children" is used as applying to those under 14 years of age. In persons of these tender years acquired hernia is almost never seen, hence the congenital forms will be practically the only ones considered.

Prompt closure of the umbilical opening after the cord is tied is the rule, but in some instances the opening persists and allows the protrusion of intestine. In some cases the protrusion exists at birth and intestine has been included in the ligature placed around the cord. These umbilical hernias are not uncommon and consist in a distinct protrusion at the navel at each act of coughing, straining, or exertion of the abdominal muscles. The ring nearly always closes without special treatment, but recently the writer has observed a case of non-closure in a lad of 15 in whom there was an opening at the umbilicus one-fourth inch in diameter, with distinct protrusion on straining.

As a rule, the only treatment necessary is the application of a flat pad, held in place by adhesive strips or a suitable binder. The convex pads ordinarily used are worse than useless, as by their shape they tend to keep the ring open rather than to assist its closure. Care should be taken by the parent or nurse to place a finger over the aperture whenever the truss is removed, as it frequently must be, for purposes of cleanliness. The skin should be protected by a simple dusting powder. Should the condition persist in spite of preventive measures, an operation for radical cure would be justifiable, as operative measures are much more successful in childhood than in after-years. There is a form of hernia, not infrequently seen, where the opening is not at the umbilicus, but about half an inch above it. This is due to weakness of the linea alba and generally persists, operation being necessary for its cure.

Femoral hernia in children is rare. There is not so large an opening as in the adult, and the muscles and vessels fill it almost completely, so that there is not so much chance for protrusion. It is almost invariably acquired. It is seldom or never cured by mechanical means, and its existence calls for operative measures if a cure is hoped for. Bassini's operation or some modification of it will probably give the best results.

Inguinal hernia may be either congenital or acquired.

There seems to be a certain hereditary factor in hernia. Macready, in his analysis of the records of the London Truss Society, found that 25 per cent of persons with rupture gave

family history of hernia. In families where one or both parents were ruptured the percentage was 22.5, as against 16.6 in families without this hereditary tendency.

Study of a large number of cases has shown that of 1,000 males ruptured 175 are affected in the first year of life, while in the same number of females 91.6 will be ruptured during the same period. Of 300 cases of inguinal hernia analyzed by Malgaigne, 44 occurred before the tenth year.

A brief review of the anatomical points in connection with inguinal hernia may not be out of place. In the fetus the testicles are in the lumbar region, behind and partly covered by peritoneum. The testicle carries its peritoneal covering with it in its descent into the scrotum. Thus is formed the funicular process, lying in front of the testicle and cord. Normally this is constricted at the internal ring, the lower portion forming the tunica vaginalis testis and the upper the infundibular fascia of the internal ring. In some cases closure is not complete, and intestine entering the upper part of the canal finds its way without difficulty to the bottom of the scrotum, following the funicular process. This is the ordinary form of congenital inguinal hernia in males. In females the protrusion is into the canal of Nuck. There are some modifications of this form of occurrence, dependent upon peculiarities in the method of closure of the funicular process, which are more interesting to the anatomist than to any one else and need not concern us.

The diagnosis of hernia in children is made upon the same lines as in the adult. The one condition with which it is most likely to be confused is hydrocele of the cord. In the latter we have an oval tumor, outside the external ring, but capable of being pushed into the canal. In doubtful cases aspiration with the hypodermatic needle, under proper aseptic precautions, will settle the diagnosis.

The treatment of hernia in children may be divided into the mechanical and the operative. There are certain measures tending to prevent protrusion of the gut which should be adopted in all cases. The condition of the digestive organs should be carefully looked after. Food should be of such a character as to be easily digested, and constipation should not be allowed to occur. Straining at stool should be avoided. Any conditions which lead to coughing should be remedied. Among these are bronchitis and affections of the throat and nose, such as enlarged tonsils, elongated uvula, adenoids, etc.

If phimosi exist it should be relieved. These measures are all adjuvant to the application of a truss. The fit and adjustment of this appliance are matters demanding skill and care. The physician should make it his business to apply the truss to these little patients himself, and not, as is too often the case, leave it to a dealer who has no interest in the case aside from the commercial one. To obtain a cure by the use of a truss demands, in the first place, a perfectly fitting appliance, and, in the second place, constant watchfulness on the part of the mother or nurse. The springs of the trusses usually sold are too strong, and they soon become so irksome to the little patients that they are abandoned until later life. On the other hand, a weak spring will not properly retain the gut and is worse than useless, as it leads to a false sense of security. A perfectly fitting truss should not give its wearer any particular sense of inconvenience other than that necessarily caused by any appliance. A point of great importance is that the pad should be placed over the internal and not the external ring, if we wish to secure a closure of the funicular process by adhesive inflammation, which is the object of a truss. The pad should be hard and slightly convex. Too great convexity is a detriment, as it tends to keep the ring open. The aim should be to secure just enough pressure upon the canal to keep its sides together so that they may eventually adhere. If the rupture is large the truss should be worn night and day for a while. If the protrusion is small the truss may be worn only while the child is on its feet. It should be applied before rising, and taken off only after the child has lain down. The skin should receive proper attention, in order to prevent chafing. The simple skein of Berlin wool has in my hands answered as well as the more pretentious appliances. It is efficient, cleanly, and inexpensive. With any form of appliance constant vigilance is necessary to effect a cure, as one moment of laxity, allowing the gut to descend, will undo the work of months of patient effort. One writer recommends that if a truss do not retain the hernia perfectly, the child be put to bed and kept on his back with the truss constantly applied. He states that if this course be persisted in a cure will result. This is probably true, but he fails to state how long one should persist; and, aside from this omission, the recommendation seems to me perfectly impracticable. At the best it takes two years to bring about a cure by the use of a truss, and to keep on his back for this length of time an active, growing, and

otherwise healthy child is a task beyond the power of ordinary mortals. There are few children patient enough and few parents heroic enough to carry out this recommendation. Indeed, it is by no means improbable that so long a stay in bed would result in such impairment of the child's general health that the last state of the patient would be worse than the first.

Bearing in mind the fact that in adults a truss is applied as a preventive measure only, while in children it is applied to effect a cure, it is evident that it should be applied as soon as the hernia is discovered. The rule is that the earlier the truss is applied the better the prospect for a cure.

In summing up the results of mechanical treatment we may quote Macready, to whom we are so largely indebted for our knowledge of the statistics of hernia. He says: "We can only speak of probabilities. It may be said that many boys are cured; that the prospects are more favorable still for girls; that the younger the patient the more probable the cure; in those with femoral hernia there is little prospect of being able to dispense with a truss." The records of the London Truss Society show that 33 per cent of ruptured children go beyond the age of 11 years uncured. Malgaigne says that only 20 per cent of the ruptured are cured by a truss.

Diligent search of the literature has failed to reveal any data bearing upon the question of the permanence of cures resulting from the use of trusses. In the absence of specific data one can only give expression to opinion. The writer believes that in many of those apparently cured by the truss in childhood hernia recurs in later years. The reasons for this belief are that the truss does not obliterate the little dimple formed in the peritoneum as it enters the internal ring, and also that the union in many cases is not firm enough to resist strong pressure. Any undue exertion would tend to reopen the canal. The union resembles that obtained by the injection method of treatment, which has been abandoned as unreliable.

Can anything be done for this large percentage of children not cured by a truss? There is a remedy in the shape of an operation for the radical cure. This operation has been perfected to such a degree that it is now the first recommendation of the surgeon in adult cases. Is there any reason why it should not be equally effective in children? The writer is aware that many cases treated by retentive appliances, and some few without any treatment at all, are cured, and he would not be understood as recommending indiscriminate operating. The

truss should be given a fair trial in every case, but if a truss has been worn faithfully or if for any reason a truss cannot be worn, operative measures are, in the writer's judgment, demanded. Some of the conditions interfering with the application of a truss are adherent omentum, the presence of a hydrocele, and the existence of an irreducible hernia, although this is rare. Again, if a truss has been faithfully worn for two years, it is useless to persist with a view to curing the hernia. The use of a truss demands constant care, which many parents are unable or unwilling to give.

To allow a healthy boy to attain adult years with a hernia seems almost a crime from the surgeon's view-point. This is the age of athletics. A boy with hernia is debarred from all sports calling for active effort. Should he desire to enter the military or naval service his disability causes his rejection. The same is true of the police and fire departments. Many trades are closed to him. Should a spirit of adventure or the demands of duty call him to distant parts of our own or other lands where he would be far from medical aid, he is afraid to respond lest by the breaking of his truss or other misadventure his life be endangered. Ask any sufferer from hernia who is of mature years the following question: "Would you prefer to be as you are now, or that your parents had subjected you during childhood to an operation of trifling danger which would have cured you?" and see what his answer will be. The tissues in children heal readily, and operations, as a rule, are more successful in them than in adults, hernia being no exception. The mortality of the radical operation is low—1½ per cent in 5,000 cases of all ages collected by Bull and Coley. These operators also report 250 operations in children under 14 years of age, done at the Hospital for Ruptured and Crippled between December, 1891, and March, 1895, with 3 deaths and 4 relapses. In a personal communication Dr. Coley gives his own mortality as 1 in over 650 cases of all ages. In a paper read before the Section on Pediatrics, New York Academy of Medicine, January 13, 1898, he reports 460 cases of operation in children under 14 years of age, with 1 death: this was his seventy-first case, and was due to ether-pneumonia. Since then he had operated upon 230 consecutive cases in children without a death. Broca reports 477 cases in children with but 2 deaths. With this showing as to mortality, are we not warranted in claiming the mortality as trifling? If these children had been allowed to grow up without operation, is it not prob-

able that a larger percentage would have died from strangulation or other accidents attending hernia than did die as a result of the operation? As to the proper time to operate, Bull and Coley put 4 years as the lowest limit, while Langton and other operators do not advise operation under 6 years of age. In view of the difficulty in keeping dressings on a young child and the liability of their becoming soiled by urine and feces, the latter age limit would seem more reasonable. The operation of choice would probably be the Bassini or some modification of it.

Hernias in children are subject to all the accidents which attend the condition in adults, such as strangulation, incarceration, etc. In such cases operation becomes imperative and the opportunity should be seized to make a radical cure.

The following conclusions may be drawn:

1. Hernia is a not infrequent condition in children.
2. Of the forms of hernia, the umbilical is generally cured without operation, the femoral never, and the inguinal in from 70 to 80 per cent of cases.
3. In view of the serious handicap in the battle of life caused by a hernia, it is justifiable and proper to recommend an operation for the radical cure in children who have faithfully worn a truss for two years without benefit or in those cases where a truss cannot be worn.
4. The mortality from operation is less than would result from the accidents attending hernia were no operation done.

1013 FIFTEENTH STREET.

REPORT OF A CASE OF SUPERIOR OCCIPITAL HYDRENCEPHALOCELE SUCCESSFULLY OPERATED UPON.¹

BY

A. PALMER DUDLEY, M.D.,
Surgeon to Harlem Hospital, New York.

(With six illustrations.)

ERICHSEN, in his "System of Surgery," speaks as follows:
"Congenital hernia of the membranes of the brain is sometimes met with in the form of *meningocele* or of *enceph-*

¹ Read before the New York County Medical Society.

alocele. In the former the protruded sac is filled with fluid; in the latter it contains also cerebral substance. The diagnosis between these two conditions is generally difficult and is of little practical importance. The disease is usually speedily fatal. Z. Laurence finds that, of 39 instances in which it occurred, 21 were males, 18 females; and the protrusion may vary from the size of a pea to that of a tumor exceeding the child's head; and that the occiput is its chief seat—of 79 cases 53 being in this situation. The hernia may occur at any of the unossified points of the skull, and has been observed, in a case described by Lichtenberg, to protrude from the base of the skull through the mouth. In 6 instances the subject of this malformation reached an adult age; in all the remaining cases they died early or were still-born. Surgery offers little in these cases, though in one instance Paget used injection of iodine with success; and in another, where sloughing of a portion of the tumor was taking place, Annandale applied a ligature to the peduncle and removed the tumor, the child recovering completely in spite of an attack of measles. In another case the portion of brain was successfully sliced off, the patient surviving."

Dennis, in his "System of Surgery," pages 722 to 732, describes this condition in a most thorough manner, giving references and numerous drawings of the various forms of these tumors and their most frequent location. I need not, therefore, tax your time and patience with a description of the various forms of this congenital malformation, it being already in print. Simply note the fact that the case to be described was not a simple meningocele, where the meninges protruded through the skull and were simply filled with water; neither was it an encephalocele only, but a hydrencephalocele. These occur most frequently in the occipital region, and contain the distended posterior cornua of the lateral ventricle. Dennis says occasionally they occupy the posterior occipital region, as in this case of mine, and may contain a portion of the cerebrum with the hydropic fourth ventricle. Some of the largest tumors are, in fact, those which contain the occipital lobe of the external cerebellum with the quadrigemina, the distended posterior cornua of the lateral ventricle, and the dilated fourth ventricle with the Sylvian aqueduct, the latter distended with fluid—the quantity, of course, varies. The case under observation, as the report shows, contained about two pints of fluid. The brain tissue weighed 57 grammes. I submitted it to examina-

tion by Prof. Brooks, of the Post-Graduate Hospital laboratory, whose report is appended.

Most of the writers whom I have been able to consult upon this topic, especially those who have reported cases, seem to draw the conclusion that surgery in these cases is of little or no avail. Tilmans¹ says he thinks the incision through the soft parts in the bone should be made at different levels, and the periosteum should be completely removed from the bone to be taken away. In my judgment such a procedure would seriously endanger the result and tend to produce inflammatory or suppurative complication in one so young. At any rate, in



FIG. 1.—Showing tumor before operation.

a case similar to the one I am reporting, it would be impossible to return such a large amount of brain tissue into the skull, no matter how much bone tissue was taken away.

Report of Case.—M. B., admitted October 17, 1899. Italian; born in the United States; age 6 days at the time of operation.

Family History.—Father, N. B., age 36, born in Italy; personal and family history good; no specific or tubercular history. Mother, L. B., age 34, born in Italy; family history negative. First menstruation at 13 years of age; always regular and normal. Married at 17 years of age. Mother of seven children, with one exception now alive and well. All

¹ Centrablatt f. Chir., July 28, 1894, p. 29.

these births were easy and normal. The last child, born October 16, 1899, is our little patient. During the course of this pregnancy the mother suffered almost constantly from epigastric pain and distress, anorexia, nausea, frequent emesis, and persistent headaches. Was in labor two days before delivery of child, and, as far as can be gathered from her history, was greatly exhausted and almost in collapse when child was at last born. Was attended by a midwife only. The child was brought to the hospital on the day following.

Physical Examination. (a) *Inspection.*—Child small and poorly nourished. Head microcephalic, receding forehead and chin, eyes showing moderate exophthalmos; skin sallow; face



FIG. 2.—Tumor lifted up to show extent of pedicle.

weasened and old; abdomen large and distended moderately. General skeletal evidences of rachitis. About one inch below the posterior fontanelle is a distinct pedicle which supports a large hernial tumor. The hair of the scalp is continuous on to the neck and upper third of the body of the tumor; the skin shows patches of ecchymotic discoloration over the fundus of the sac, probably originating from traumatism occurring during progress of labor. Tumor translucent except at its neck. Fundus of sac about on level with mid-dorsal region of spine.

(b) *Palpation.*—Anterior, posterior, and lateral fontanelles open and markedly large. Coronal, sagittal, and lambdoidal

sutures open and permitting pulsations of dura to be distinctly felt throughout their extent. All the bones of cranium soft and very imperfectly ossified. Imperfect deposit of bone especially marked in occipital. At a point just above the external occipital protuberance was found an opening through which protruded the sac of the hydrencephalocle. A small strip of bone seemed to be absent between this opening and the posterior fontanelle, thus forming a channel of communication between them. Just below the neck of the large hernia there appears to be another small hernia, possibly due to a further insufficiency of bone deposit in the posterior arches of the atlas and axis. Hernial tumors did not give impulse on coughing and crying. Tumor soft, fluctuating, giving sen-



FIG. 3.—Showing scar left after recovery from operation.

sation of fluid to touch, irreducible. At and a little beyond neck a smaller and denser mass was made out within the sac.

(c) *Percussion*.—Tumor felt on percussion; distinct succussion wave.

(d) *Mensuration*.—Longest diameter of tumor, about 9 inches; transverse diameter, about 5 inches; diameter of opening in occipital bone, about $1\frac{1}{2}$ inches. Organs of thorax apparently normal. Liver large, spleen moderately so.

Symptoms.—Child presented no especial constitutional symptoms, and appeared to suffer no inconvenience whatever except that due to the weight of tumor when improperly supported. Bowels were regular, stools normal, nourishment well taken and retained. Absolutely no cerebral or localizing symptoms. Child was placed on a milk diet suitable to its age. Patient was restless and fretful at times, but the cause

was usually found to be an uncomfortable position of the hernial tumor. On the fourth day after admission, decided on operation for radical cure.

Operation.—Complete amputation of entire sac and its contents, December 21, 1899. Scalp shaved and carefully prepared for operation. No anesthesia employed. After the usual antiseptic preparation, and with strict observance of every aseptic detail, the neck of the hernial sac was transfixed with a straight needle armed with a heavy catgut ligature; the ligature was then drawn taut by a Staffordshire knot. While the ligature was being tightened it was noticed there were powerful and marked contractions of the muscles of left side of face; conjugate deviation to the left; lower jaw drawn to left; general contraction of muscles of left side of body, to a lesser extent those of the right arm and forearm. An incision was made in a circular manner around the neck of the sac, just beyond the point of ligature, with blunt-pointed scissors, making allowance for a liberal skin flap. Superior and inferior flaps of skin were then made and turned back toward the base of pedicle. Incision then continued through the dura. When the latter was opened, about two pints of a clear, straw-colored fluid escaped. At this point the ligature about pedicle slipped and was removed entirely; very slight hemorrhage followed. No attempt was made to replace ligature. After removal of dural sac the remaining cerebral portion of the hernia was brought into view. The latter was a bilobed sac apparently divided by a median partition into two lateral halves. The sac was divided circularly in the same manner as the dura. The weight of the brain tissue and membranes was 57 grammes. The amount of fluid accompanying the specimen was 120 cubic centimetres. Microscopic examination showed brain nerve tissue. The cerebral hernia was divided at its neck, thus completing the amputation. When the arachnoid, which formed the sac of the cerebral hernia, was divided there was a moderate hemorrhage, which was controlled by hot, moist sponges. There were no vessels requiring ligature. The stumps of the two sacs were next united over the stump of the cerebral portion by a continuous silk suture, and lastly the skin flaps in the same manner, the line of skin suture dusted with aristol, and an aseptic dressing and compress applied. During the entire operation the child seemed to feel no pain and made no cry. Patient was returned to ward in good condition. After the ligature was removed,

during operation, the muscular contractions seemed to lessen to a considerable extent, and did not increase when the cerebral tissue was divided.

Post operative Course and Treatment.—Patient rallied well from operation; seemed to suffer little if any shock. Temperature (one hour later) 100° , pulse 110, respiration 28. Whiskey, 10 minims every three hours, prescribed. Wound dressed on following day and compress applied. During the next nine days no change of any importance was noted. The temperature remained stationary at about 100° F. Pulse ranged between



FIG. 4.—Brain. Superior surface.

100 and 124. Wound was dressed at regular intervals. Slight suppuration occurred about stitches. Stitches were removed on ninth day following operation. On the evening of the ninth day following operation the temperature became subnormal, 96° F., pulse ranging between 90 and 132. The whiskey was discontinued. Patient developed slight convulsions on left side of body and right side of face; general spastic rigidity, particularly marked on left side of body, and to a less degree in right arm; marked retraction of muscles of neck. During the next twenty-nine days the temperature assumed an irregular and remittent type. On the evening of the fortieth day it assumed the normal, and has so remained up to

the present time. Inunctions of olive oil were used thrice daily. On the twenty-third day patient again had convulsions, slight and general in character. The spasticity has existed since the appearance of the first symptoms of irritation following operation. Compression of the stump could not be constantly applied because of the evident increased irritability caused by the compress. On the forty-second day there developed on the face and body a pustular eczema, which has responded readily to treatment and at present writing has almost disappeared. The stump healed perfectly. There has been little if any

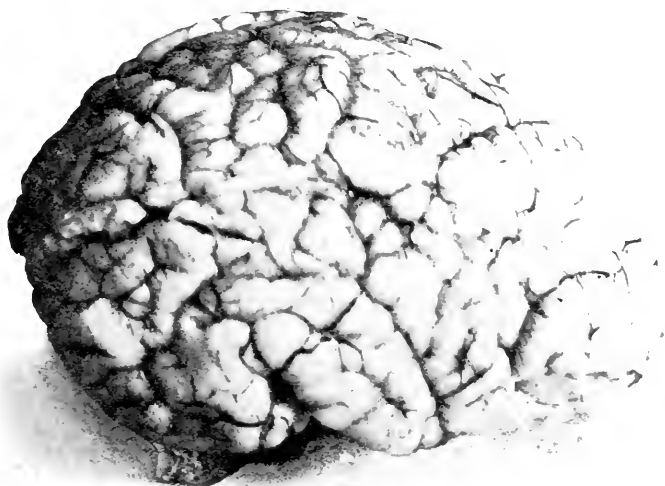


FIG. 5.—Brain. Lateral surface.

attempt at ossification about the hernial ring in the occipital nor about the open fontanelles and sutures. Pressure on the wound seems to cause very powerful contractions of the muscles of the neck, back, left side of body, right arm, right side of face, and of the larynx and tongue. A considerable degree of muscular atrophy seems to have occurred. The child has taken nourishment well, and the bowels have been regular and normal. Retina and vessels apparently normal. Nerve not seen. Pupils do not react readily to light. The ophthalmologist to the hospital has been unable to decide whether the child sees or not.

The photograph, taken previous to operation, will give a

better idea of the exact size and location of the hernia than I have been able to do in my description of it. The child digested its food well, increased much in weight, and was apparently in a fair way to live, when on January 7, 1900, it succumbed to a broncho-pneumonia. I append the interesting report of an autopsy performed by Dr. Herbert H. Brooks:

Autopsy, January 8, 1900, at 9 A.M., by Dr. Brooks. Body kept in ice-box from time of death until autopsy. The body is that of a female infant; it measures from the vertex to the plantar surface of the feet 49 centimetres. The body weighs 1,370



FIG. 6.—Brain. Inferior surface.

grammes. The extremities are flexed, and the hands and feet, with toes and fingers, very markedly flexed. The forehead slopes back rather unusually; the face is narrow, ovoidal in form; the eyes are protruding; the left pupil is more dilated than the right. The chest is of rachitic type, and there are small nodosities along the junctures of the costal cartilages and the ribs. The abdomen is proportionately large. There is a general emaciation, which is more apparent in the extremities. The skin is clear and white, unusually pale. Rigor mortis is absent, but there is still some muscular rigidity in the flexors of the extremities. There is an operative wound in about the region of the occipital protrusion; just be-

neath this is a rather soft mass measuring 4 centimetres from above downward and 6 centimetres laterally. It is movable, but apparently attached to the skull. It measures about 2 centimetres in its thickest portion.

Section.—The skull is long and narrow; the sutures are not united. The anterior fontanelle is still open. At the juncture of the parietal with the occipital bone there is a discrepancy of osseous tissue, which extends down, uniting with the foramen magnum. It measures 3 centimetres broad at its widest part, and is covered in by membranous structure down to the border of the foramen magnum, the edge of which is represented by a rather firm fibrous ligament. The centre of this membrane shows a puckered scar, evidently of operative origin. The dura mater is natural, the pia mater is natural. The cerebrum is large; the convolutions are large, symmetrical on both sides, and are fully as abundant as normal. The sulci are deep; the size of the brain, as compared with that of the body, relatively normal. The cerebellum is extremely small, the right lobe considerably more so than the left, and the right lobe shows that about seven-eighths of its volume has been removed. The posterior internal portion of the left cerebellar lobe is also missing, and this lobe is about one-third its normal volume.

The medulla is somewhat distorted and has been rotated slightly to the right. The foramen of Monro is widely opened and from it a considerable amount of clear serous fluid escapes. The optic nerves are of natural size, but the chiasm appears unusually small. The olfactory nerves and all the other cranial nerves are given off normally and appear to be in natural position and condition. The weight of encephalon is 385 grammes.

The pituitary body is large; it appears normal in structure. The base of the skull shows deep fossæ and no abnormalities excepting the discrepancy in the occipital bone. Apparently the tumor which has projected through this abnormal space was almost the entire right and the greater part of the left cerebellar lobe. The space has been since the operation completely bridged over by fibrous connective tissue, and the surgical condition is perfect. The tumor external to the skull in the occipital region is found to be made up of a loose edematous, embryonic connective tissue, and to have no connection at this time with the intracerebral structures, the communication having apparently been obliterated by the surgical procedure.

The spinal cord shows no gross abnormality, nor is there any apparent lesion present in the ganglia or peripheral nerves.

The tongue is large, well formed, natural in every respect. The pharynx and the esophagus are normal. The sympathetic ganglia of the neck are perfect in form and location. The thyroid gland is of usual size and natural in appearance. The thymus gland is small but natural. The aortic arch has in the neck a lumen of 3 millimetres in diameter. The arteries of the neck appear natural in every respect. The heart is large; it is firmly contracted, the cavity of the left ventricle being almost completely obliterated. The foramen ovale is closed. The valve segments are natural. The weight of the heart is 5.5 grammes. The mucous membrane of the trachea and larynx is anemic, but the trachea and large bronchi contain a considerable quantity of mucoid secretion. The upper portion of the left lower lobe of the lung shows a large tract of broncho-pneumonia, and the posterior portion of the right lobe shows considerable hypostatic congestion.

The liver is large, the blood vessels are very considerably congested, the markings are distinct, and, aside from the congestion, the structure appears to be normal. The gall bladder contains about 2 centimetres of dark-brown bile. The liver weighs 125 grammes. The spleen is large; it appears natural in every respect and has a weight of 5 grammes. The pancreas is natural. There are no abnormalities of form or position in the intestinal tract. The stomach contains a small quantity of fluid of normal appearance. The intestine is for the greater part empty, but appears normal in every respect. The mesenteric lymph nodes are quite large, and several of them appear acutely congested. The adrenal bodies are large and have a united weight of $2\frac{1}{2}$ grammes. The umbilical arteries and the urachus are still plainly evident, but their lumen is normally obliterated. The kidneys are of natural size, but are somewhat more elongated than usual; fetal lobulation is faintly evident; the capsules are natural; the markings are distinct and regular, the blood vessels not abnormally injected, and the structure appears normal in every way. They have a united weight of $12\frac{1}{2}$ grammes. The ureters are natural. The bladder is normal in size and position; it is empty. The internal genitals are of normal size and well formed, normally placed, and natural in every respect. The abdominal aorta has a mean diameter of 5 millimetres.

The cause of death is broncho-pneumonia.

PLACENTA PREVIA,

WITH DEATH OF FETUS BEFORE TERM, AND DELIVERY WITHOUT
HEMORRHAGE.

BYU. S. BIRD, M.D.,
Tampa, Florida.

PLACENTA previa is a complication of pregnancy and labor with which few of us, fortunately, have had to do. Its symptoms and course, as set forth in its literature, seem to be fairly distinct, variations from which would seem to be rare. The ordinary paper on the subject is a report of cases, with deductions and indications for treatment. Nothing unique has come to my notice, certainly nothing approaching the case I report.

Several years ago, while a hospital interne, I witnessed and examined a case in which the placenta was located over the os, necessitating much manipulation and traumatism to deliver. It was necessary to remove part of the placenta by the fingers in fragments before the fetus could be reached. After delivery of the fetus the remaining placenta was adherent and could be partially removed only, and with great difficulty. Death was probably due to acute anemia complicated by sepsis.

I am indebted to Dr. J. M. Grantham, of this place, for the following particulars: January 28, 1900, he was called about 11 A.M. to see a case which developed a history and course as follows: The patient was a colored woman, age about 30. She had had four children, with nothing remarkable about her confinements. All children alive at birth. Two died within a few days after birth, one within a few months; one was then living. Her existing pregnancy supposed to be about seven or eight months advanced. Nothing abnormal about it except the premature labor, in which she then was. She had never lost any blood.

She was employed as a cook, and while at her work during the morning of the 28th was taken with pains. Becoming rapidly worse, she was taken home in a carriage. There Dr. Grantham saw her. Washing his hands as quickly as possible, he

removed the bedclothes. On the sheet between the woman's thighs was a placenta, with cord attached leading into the vagina, at which presented the breech of the fetus. One or two more pains completed the delivery of a macerated fetus which he judged to have been dead some two weeks. Before delivery of the fetus the sheets were slightly stained with blood, and at no time was the loss of blood excessive. The placenta was medium-sized, apparently syphilitic. Its color was abnormally light, and the uterine surface showed numerous indurated areas. No microscopic examination was made. Her recovery was uneventful.

TRANSACTIONS OF THE SECTION ON GYNECOLOGY OF THE COLLEGE OF PHYSICIANS OF PHILADELPHIA.

Stated Meeting, April 19, 1900.

JOHN B. SHOBER, M.D., *in the Chair.*

DR. CHARLES P. NOBLE read a

REPORT OF TWO CASES OF EPITHELIOMA OF THE VULVA.¹

DR. JOHN C. DA COSTA.—Cases of cancer of the vulva are rare and experience shows them to be unsatisfactory to deal with. Recurrence is prompt in almost all instances. I have not seen a case for three years, but remember very clearly five in previous years (not all my own). In these cases operation was, I think, thoroughly done, but in every case recurrence was rapid, the longest interval being ten months, and in this case there was great involvement with the recurrence.

I think possibly the delay in recurrence in Dr. Noble's first case may be due to the age of the patient. Although cancer is a disease rather of the breaking-down period, we sometimes find in women older than 60 quite a long period between the removal of cancer in other parts and its recurrence. I congratulate Dr. Noble on his success.

DR. M. O'HARA, JR.—In 1892, while substituting for Dr. Baldy at St. Agnes' Hospital, I observed a case such as reported. The growth had existed for five or six years and came from the right labia majora: incision was made well into healthy tissue and the growth completely removed; microscopic report showed it to be an epithelioma. As the patient had albuminuria, chloroform was used, which she

¹ See original article, p. 204.

took nicely; she returned to perfect consciousness in twenty minutes or so; notwithstanding this, an hour or two after the operation she became quite restless, and, throwing up her hands, expired before the resident could be summoned. The cause of death could not be ascertained, as a postmortem was refused.

DR. H. D. BEYEA.—I would like to refer to a case which Dr. Penrose reported before the Section in 1895, in which the labia majora on one side were involved. The growth was thoroughly excised and the wound closed with sutures. Healing occurred very promptly and the patient went home. Within a year there was a return of the condition and soon afterward she died.

I speak of this because of the result, and I would also like to mention that among all the cases at the University Hospital from 1893 up to last year, and also in the Gynecean Hospital during the same period, this was the only case of epithelioma of the vulva admitted.

DR. JOHN B. SHOBER.—The greatest importance lies in the early diagnosis of these cases, and therefore we should remember that whenever any lesion exists upon the vulva or external genital organs it is our duty to make microscopical examinations. The only hope for these cases is an early diagnosis followed by immediate operation. The lymphatic system in this region is so excessive that before the growth has attained any size there is involvement of the lymphatic structures, and only the most extensive and mutilating operations give a small hope of permanent cure. I believe, however, that, as in the Hunterian chancre, there is a stage when the disease is purely local and if taken in time will not return.

DR. M. O'HARA, JR. (by invitation) showed

A NEW INTESTINAL ANASTOMOSIS FORCEPS.¹

DR. R. G. LE CONTE.—I have had experience only with one style of forceps, namely, that of La Place. It strikes me that in the forceps shown by Dr. O'Hara there are three distinct advantages over the instrument devised by La Place. In the first place, but one instrument is required for all kinds of work, no matter what the calibre of the gut may be, while with La Place's instrument you must have a series of forceps of varied calibre to correspond with the size of the gut with which you are dealing. In the second place, this forceps is easier to handle and its mechanical principle is a more simple one. Thirdly, an advantage which has already been pointed out is that the forceps is applied on the peritoneal surface of the bowel before the gut is opened, and the dangers of extravasation of fetal material are therefore avoided.

DR. JOHN B. SHOBER.—I am indebted to Dr. O'Hara for the privilege he afforded me in testing the application of this

¹ See original article in July JOURNAL, p. 81.

forceps upon the intestines of the cadaver a few weeks ago. I was extremely well pleased with the ease with which it can be used, and was particularly struck with the fact that at no stage of the operation was the lumen of the gut exposed. Of course, if the forceps is carelessly applied, there is the possibility of its slipping, thus exposing the lumen of the gut and allowing its contents to escape in the field of operation; but with proper care and with the forceps as now modified it seems to me that the danger is very slight. It might be advisable to milk the intestine, at the point at which the forceps is applied, away from the forceps, and then apply pressure by the elastic ligature or properly guarded forceps, so that there would be little leakage should the forceps slip. This forceps seems to me to be free from the objections and at the same time to combine the advantages of all other forceps which have been designed for intestinal anastomosis, and I desire to thank Dr. O'Hara, in the name of the Section, for demonstrating it here this evening.

DR. M. O'HARA, JR. (in conclusion).—I wish to return my grateful acknowledgment for the courtesy showed me and the kindly expressions of your Chairman.

As to the gut slipping, as is remarked by Dr. Shober, it should not occur if the sutures are placed properly; in fact, it is not at all necessary to put any traction upon the forceps. The traction should be made toward the forceps, and not away from it.

DR. ROBERT G. LE CONTE reported two cases :

I. OVARIAN CYST, WEIGHT THIRTY-TWO POUNDS, REMOVED SIX WEEKS AFTER A NORMAL DELIVERY. II. TRAUMATIC RUPTURE OF A DERMOID CYST.

CASE I. *Ovarian Cyst, weight 32 pounds, removed six weeks after a Normal Delivery.*—A. C., Italian, age 27, housemaid; family history negative. Personal history: General health always good. Menstruation began at 15 years and has always been regular. Married for four years and has had three children. One year ago there was no abnormal enlargement of the abdomen nor any pelvic symptoms. Six weeks ago she was delivered of a large full-term child; labor said to have been normal. After delivery it was noticed that the abdomen remained about as large as it had been previously.

Admitted to the Pennsylvania Hospital March 27, 1900. Abdomen dome-shaped and very much distended, but skin over it not very tense. Tympanitic note only over ensiform cartilage and short ribs; elsewhere universally flat, even in the flanks. Girth at umbilicus 47 inches, ensiform to pubis 22 inches. Fluctuation very distinct, feeling as though skin only separated the finger from the fluid. Cervix soft and lacerated; uterus apparently enlarged, but could not be outlined owing to the fluid above. Urine negative and other organs negative.

March 28, patient etherized and a three-inch incision made in the median line below the umbilicus. The cyst immediately presented. Recent, friable adhesions bound it to the parietal peritoneum at the level of the umbilicus and to the intestines above. The cyst wall was very thin. The cyst was freed from adhesions as far as the hand could reach, tapped, and 500 ounces (nearly four gallons) of dark-brown fluid drawn off. The remaining adhesions were then broken up, and the sac delivered and found to contain several small cystic collections in its wall. There was a good pedicle from the left broad ligament, which was easily ligated. There was no shock following operation, and the patient's recovery has been uneventful.

Pathological Report by Dr. Cattell.—"No. 456 is a multilocular cystoma of the ovary. The contents of the large cyst, which were of a clear, grayish-red color, weighed a little over 32 pounds avoirdupois. The size, when extended with water after removal, varied from $8\frac{1}{2}$ to $10\frac{1}{2}$ inches in the various diameters. The smaller cysts are filled with a colloid material, the oviduct extending 5 inches, attached to the tumor."

We all know the stimulating effect pregnancy has on the growth of ovarian cysts, but that one of such large size should develop so insidiously and in no way complicate labor seems remarkable. I believe nothing abnormal was suspected until after the birth of the child, when it was found the abdomen remained about the same size as just previous to delivery.

CASE II. Traumatic Rupture of a Dermoid Cyst.—C. W., mulatto, age 32, housemaid, was admitted to the Pennsylvania Hospital March 20, 1900. She gave the following history: A week ago she fell from a step-ladder, striking the right side of her abdomen against the back of a chair. She felt something give way inside. Since then she has had constant abdominal pain, more marked in the right flank, and has voided bloody urine in small quantities. Her previous history is as follows: Menstruation at 14, always regular. Married ten years; has had two children, last birth eight years ago. For the past four years has had pain in the back and lower portion of abdomen, but this was never sufficiently severe to stop her working or for her to consult a physician. On admission temperature 99° ; pulse 100, very small and weak. The abdomen was flat, muscles a little rigid, with universal tenderness. The right flank seemed more full than the left, and was very tender on deep palpation in the region of the kidney. Vaginal examination, which was not very satisfactory owing to the rigidity and tenderness of the abdomen, revealed a fixed uterus, some thickening of the left side, and a large, firm, hard, fibroid-like mass of the right side. With the history of bloody urine and the marked tenderness in the region of the right kidney, I was led to suppose that that organ had been injured and that probably some extravasation of blood had taken place in the surrounding tissues. As the injury was a week old, expectant treatment was pursued. The patient was freely stimulated with whiskey and strychnine, and ice applied

to the right side. For a week the patient's general condition improved; the abdominal tenderness decreased, and almost disappeared in the region of the kidney, but her temperature continued elevated, varying from 99° to 101° . After admission to the hospital the urine never contained blood, although a small amount of pus and a trace of albumin were present.

As all the symptoms of injury to the kidney had subsided, and still the patient had some abdominal pain and tenderness with fever, I naturally turned to the pelvis for the solution and believed that I had to deal with a case of chronic tubal disease in which an acute inflammation was added as the result of the traumatism. March 28, one week after admission and two after the injury, the patient was etherized and the abdomen opened in the median line. Some thick, golden-yellow, oily fluid escaped, and an examination revealed the omentum, intestines, and all the organs within reach heavily coated over and apparently infiltrated with this material, which resembled closely in appearance and consistence a curdled mayonnaise dressing. The omentum, which was half an inch thick, was particularly well infiltrated with this material and was scarcely recognizable. A mat of hair as large as a dollar was found free in the left pelvis. The remains of the cyst wall were confined to the right side of the pelvis and were firmly adherent to the uterus, broad ligament, rectum, cecum, and part of the small intestine. It contained part of a jaw-bone and a canine tooth. As much of the cyst as possible was removed, but I feel sure that quite a portion was left behind, as the oily material made all tissues look alike and the patient's condition demanded a speedy operation. The abdomen was flushed with hot salt solution, a glass drainage tube inserted, and the wound closed. The patient was profoundly shocked after operation and required free stimulation. In twenty-four hours all drainage had ceased and the tube was removed. The convalescence since has been uneventful.

Pathological Report by Dr. Cattell.—"No. 457 is a portion of a large-sized complex dermoid, with its contents of hair, teeth, bone, cartilage, fat, sebaceous material, etc. The hair is deeply pigmented, though some lanugo hairs are found. One tooth appears to be a canine, another a molar. The wall is rapidly growing and in places is very vascular."

DR. JOHN H. GIRVIN.—In December, 1898, I operated on a case which was remarkably like the one Dr. Le Conte reports. When I first saw the girl she had been ill for several weeks and was in a septic condition. The temperature was above 102° and the pulse from 120 to 130. Finding her getting steadily worse, I made the provisional diagnosis of suppurating extrauterine pregnancy and performed laparotomy. There was found a ruptured dermoid cyst. The dermoid material, such as Dr. Le Conte describes, was in the general peritoneal cavity, but not in such large amounts as in his case. The adhesions were so general and the patient's condition so poor that I could not make an attempt to remove the mass. I

opened and emptied the main cyst cavity and stitched it to the abdominal wall. I then flushed out the abdominal cavity and cyst and packed the cyst with gauze, and introduced a gauze drain into the pelvis. The patient recovered rapidly and gained twenty or thirty pounds. At a secondary operation I removed what was left of this shrivelled-up sac of the dermoid. After that operation she did well for a few days, and then the abdominal wound suppurated and she was in a serious condition for a week or more, but finally recovered and left the hospital nearly eight months after the original operation, in apparently perfect health. I heard of her a month after she left the hospital and she was at that time perfectly well. She had gained sixty pounds over her weight at the time of the operation and had had no return of any abdominal symptoms. This case, like Dr. Le Conte's, seems to prove that it is not necessarily dangerous to allow the contents of a dermoid cyst to enter the general peritoneal cavity.

DR. JOHN B. SHOBER.—An interesting point seems to be the fact of the aseptic condition of the contents of the dermoid cyst. Rupture must have taken place, in Dr. Le Conte's case, two weeks before operation, and in spite of that fact, and in spite of the traumatism necessary in operation, the case had an uninterrupted and aseptic recovery.

Special Meeting, April 30, 1900.

JOHN B. SHOBER, M.D., *in the Chair.*

A paper was read by DR. H. J. GARRIGUES on

PERIODS IN GYNECOLOGY.

When one examines the titles of articles on gynecological subjects in their chronological order, one is reminded of the geological layers superimposed upon one another in the crust of the earth. He passed in review the periods which he had passed through himself since in 1870 he began to pay special attention to gynecology. At that time the interest was chiefly concentrated on ovariectomy, while nowadays we hardly meet with an article on this subject.

Perfection in the technique has been reached long ago, and mortality brought down from 25 to 2½ per cent. But the operation is performed much less frequently nowadays, because the diseased ovaries are removed before they have time to form large tumors.

Next there came a period when the treatment of the cervix for dysmenorrhea and sterility by means of incision and dissection or dilatation was the absorbing topic. Since cutting operations have become safe the speaker has returned to them as more effective than mere distension.

The period of trachelotomy was followed by that of trachelorrhaphy, and in the period of transition one half of the gynecological

cologists were busy splitting the cervix and the other half with sewing it up.

A little later curettage, one of the oldest gynecological operations, came into vogue, and is at present in the stage of abuse through which every good operation seems to have to pass.

With the year 1872 begins a new era in gynecology. Within a year Lawson Tait removed the appendages for diseased conditions in these organs, Alfred Hegar the ovaries in order to bring on an artificial menopause in cases of bleeding myomata of the uterus, and Robert Battey for nervous troubles. While the two other indications have been dropped, "Tait's operation" became the chief gynecological operation for the next score of years, until a more conservative spirit taught us that diseased tubes and ovaries need not necessarily be removed, but might often be cured by medical means, electricity, or conservative operations.

During the same period perineorrhaphy attracted much attention and continues to do so.

Displacements of the uterus are also a chief topic of interest in our time. Alexander's operation not only holds its own, but is spreading. In uncomplicated cases the speaker prefers it. He has no difficulty in finding the ligaments. In order to insure success, pessaries should be used for a time—an intra-uterine stem for two weeks, and a Hodge pessary for six months. Since the operation is often performed on virgins or combined with colpoperineorrhaphy, he has had special long, narrow vaginal pessaries made for the purpose of taking off the strain from the place of fixation of the ligaments without undue stretching of the vaginal entrance. There is no trouble during following pregnancies and deliveries, and the uterus retains its normal position. Alexander's operation is simpler and safer than those in which the abdominal cavity is opened by laparotomy or colpotomy. By limiting the incision within the area covered by hair the cicatrices are not visible. The chief subject of discussion in our time is hysterectomy, and it is fast approaching the same settled condition of perfection as ovariectomy. In this respect a new epoch began in 1890 when Péan published his successes with hysterectomy by the clamp method in cases of large bilateral pelvic abscesses. Soon this method was applied to nearly every morbid condition of the pelvic organs.

Views differ as to the relative value of the abdominal section and the vaginal. As a rule the speaker prefers the abdominal. The exceptions are a uterus with beginning carcinoma or sarcoma not involving the parametria or the broad ligaments; a myomatous uterus not exceeding the size of a fist; and pelvic abscesses which can be reached by colpotomy and perforation. The scar left by laparotomy is found in a part of the body hardly ever exposed to view, and the danger of ventral hernia is much diminished by careful closure of the wound.

In the vaginal operation there is less shock. The patient need not stay so long in bed. Pus may be evacuated without contaminating the abdominal cavity, and a cancerous uterus may be removed without sowing germs on unaffected parts. On the other hand, the vaginal operation is more difficult. Adhesions cannot be dealt with so well, or not at all. Hemorrhage is more difficult to check. The bladder and the intestines are more exposed to injury, and, if such an accident occurs, it is more difficult or impossible to repair the lesion. The pelvis cannot be explored so easily, and the abdomen still less.

The abdominal section offers the immense advantage that we can extend the incision *ad libitum* and make every part of the abdominal and pelvic cavities accessible.

In conclusion, the speaker described abdominal hysterectomy as he performs it. He does not use gloves, as they diminish his sense of touch and in certain vaginal operations in the dark prevent the sliding of a perforator along the finger.

He cures the uterus and irrigates it with creolin on account of its hemostatic and antiseptic properties.

He uses a special knife for the skin, as it becomes infected by severing the cutaneous glands.

The incision is best made from below upward on account of the direction of the fibres of the pyramidalis muscle. If the abdomen is distended by a large tumor the abdominal wall becomes tense and thin, and care must be taken not to plunge the knife into the tumor or other abdominal organs.

The wall should be opened layer after layer, but a director is not needed. With ordinary care there is no danger until the preperitoneal fat is reached. This should be torn deliberately and a small opening made in the peritoneum, lifting it well up, and holding the knife almost horizontally.

In one case he had found a fetal bladder extending up to the umbilicus, between the aponeurosis of the abdominal muscles and the peritoneum. He dissected it loose and dropped it into the pelvis. The incision should be long enough to allow a perfect inspection, but not longer than needed, on account of hernia.

The uterus is seized with Baer's traction forceps and lifted well up. A ligature is carried around the ovarian vessels, perforating the broad ligament twice, a clamp is put between the ligature and the appendages, and the tissue severed. It is well to secure the artery on the cut surface by a special ligature.

Next the round ligament is treated in the same way, and the first incision carried down so as to sever it.

A superficial transverse incision is made from one round ligament to the other, dipping down to a finger's breadth above the bottom of the utero-vesical pouch. It implicates only the peritoneum and the superficial muscular layer of the uterus. With closed scissors, finger nails, and an occasional nick with scissors or knife, the bladder is separated from the cervix.

The uterine artery on the first side is tied. A transverse incision is made through the cervix where it joins the body of the uterus. The uterus is tipped well over to the other side. Sometimes the second uterine artery can be seen or felt; and if not, it is tied and cut near the edge of the uterus above the cervical incision. Next the incision is extended upward to the round ligament, which is tied and cut, and finally through the second infundibulo-pelvic ligament after tying the ovarian vessels. Thus the uterus is taken out in one piece with both sets of appendages.

If we want to perform supravaginal amputation, the cervical stump is hollowed a little, the canal touched with carbolic acid, and the edges of the muscular tissue united by a few interrupted sutures.

Last of all, the edges of the peritoneum are united by means of a running suture.

If a total extirpation is preferred, the stump is seized with traction forceps, pulled up, and loosened from its surroundings, chiefly with closed scissors. The vagina is opened immediately below the cervical portion and severed all around. Some additional ligatures are needed on arteries coming from the vagina and the neighboring tissues.

When the stump of the cervix has been removed, the edges of the vagina are stitched together, and then the peritoneum is closed over it, or, if drainage is preferred, the peritoneum may be stitched to the vaginal edges and the opening filled with iodoform gauze.

The speaker uses exclusively catgut sterilized with formalin, or boiled in alcohol under high pressure.

He referred to a case in which the peritoneum was so elastic that it could be lifted an inch from the underlying muscular tissue, and was easily torn off by inserting a finger under it; but this is a unique condition. Ordinarily the peritoneum forms only an exceedingly thin endothelial covering over the uterus, and those who try to dissect it off really cut in the muscular tissue.

The abdominal wound is closed in three layers—the peritoneum, the aponeurosis, and the skin and subcutaneous fat. For the first two he uses catgut; for the last, silkworm gut and superficial silk. The aponeurosis is brought together with the cobbler's stitch, using Marcy's needle.

When the aponeurosis has been closed the wound is washed with bichloride of mercury. The wound in the skin is dusted with eka-iodoform and covered with iodoform gauze and a piece of gutta percha tissue, which forms a hermetical protection. Outside of that come sterilized gauze, absorbent cotton, broad straps of adhesive plaster, and a many-tailed bandage.

At the end of a week the sutures are removed and replaced by narrow strips of adhesive plaster. The patient is kept in bed for three weeks, and should wear a snugly-fitting abdominal supporter for three months.

This operation is the outcome of the efforts of many men.

Especially should due credit be given to Henry O. Marcy for the use of the buried continuous animal suture (1881); to T. A. Emmet for the retroperitoneal treatment of the stump (1884); to A. L. Stimson for the substitution of the direct ligation of arteries for the unsafe mass ligature (1889); to W. R. Pryor for having shown the advantage of coming from below upward on the second side (1894); and to Howard Kelly for having combined most of these ideas in a clear, precise form (1896).

Thus America, the birthplace of abdominal hysterectomy, can claim gradually to have developed it to its most perfect form, the chief representative of the present period of operative gynecology, and a worthy companion piece to ovariectomy.

DR. B. C. HIRST.—I have nothing to say except to thank Dr. Garrigues for his extremely interesting paper this evening, which I have listened to with great profit.

While not one of the older gynecologists, yet I am old enough to be a little reminiscent myself, and I can recall a meeting of the Obstetrical Society of Philadelphia not many years ago in which two of the older and most distinguished members of the Society declared that there was no such thing as a pus tube because they had never seen it.

In regard to hysterectomy, which constitutes the main part of Dr. Garrigues' paper, I think as long as we keep in mind the cardinal principles of this operation we will in the main agree with Dr. Garrigues. I think no one independently will follow just exactly the methods which he uses; but, keeping in mind the cardinal principles of cleanliness, simplicity, and ultimate success, I think we will all be doing equally good work, no matter what the individuality in our own technique.

DR. FORD, of Utica, New York.—I have had great pleasure in hearing Dr. Garrigues, and I think I testify to that when I say I have come a great way to hear him. His work is second to none in this country. He is known abroad as having done original work which will stand long after his life work will cease, which I fear will be said of very few of us.

Regarding the particular methods of doing the operation, I suppose none of us can fully agree. I have seen a great many hysterectomies in which there was nothing the matter with the uterus.

I now never attack anything through the vagina that is movable. I will attack a tube or uterus or exudate that is pretty well impacted or firmly glued in the pelvis, from below, and afterward, if necessary, remove from above in a few weeks when the patient is in better condition.

In hysterectomy some men can follow one method of operating that others cannot who may be really good operators. For instance, I am left-handed; I cannot begin below and make an incision upward. I am much afraid of blood; I would not think of cutting a uterine artery until clamped.

My work has been mainly hysterectomies for large fibroids. My method has been, after tying off the top of the broad ligament, to wrap a rubber ligature around the cervix and to excise

the tumor and uterus. Then with the clamp I hold up the stump and treat it at my leisure. I can do the operation in about fifteen minutes. The minute I have made two or three wraps down on the broad ligament and tied off, I make a nick across and push the bladder down a little, and put a rubber ligature as low down as I can, and slip a clamp on it and cut everything away. I then can get everything into view and scrape anything out the top of the stump. I usually leave the cervix in and sew it over, wrapping it so as to close it over, always putting in drainage. I have never had a stump to suppurate, which I attribute greatly to obliteration of the cervical canal and to drainage. I leave a drain in the vagina, which is removed in two or three days. If anything happens above I have a drain which, when removed, relieves any trouble above.

I simply want to say that while we all like to do an operation in the classical way, there are some of us who, by reason of physical peculiarities, are unable to do an operation in the same way as other men, but may get just as good results. We all like to hear the detailed account of a technique so graphically described as that of Dr. Garrigues.

DR. J. G. CLARK.—In view of the fact that gynecology has chiefly been developed within the last quarter of a century, it is with the greatest interest and pleasure that I have listened to Dr. Garrigues' personal narrative of the points which have especially impressed him during this period.

This personal observation makes him capable of giving us a splendid retrospect of both European and American gynecology, for he was trained in Europe and has developed the practical side of his work in America. In no other special line of surgery have there been more heroic characteristics developed than in gynecology; for when we know what intense opposition such men as Spencer Wells, Freund, Sims, and, still earlier, Ephraim McDowell, encountered in their initiative attempts in abdominal surgery, we grow to admire more and more the character of these pioneers.

When we consider the comparatively short span of time since the removal of ovarian cysts became a recognized surgical procedure, and note the great relief which has been afforded by this operation, it hardly seems possible that in any one man's experience so much improvement could have been brought about. Dr. Garrigues is in a position to look over these years of development, and therefore his retrospective remarks are especially interesting to those of us who are much younger.

There is one phase of gynecological work to which Dr. Garrigues has not referred, but which has exercised a profoundly modifying effect upon our conception of diseased conditions. The speaker has made reference to the fact that after ovariectomy became a recognized operative procedure large numbers of normal ovaries were removed under the impression that they were the seat of pathological changes. This error is very

infrequently, if ever, made at the present time by the well-trained modern gynecologist. This pointing of the way has entirely come from laboratory investigations, and we must, therefore, give the greatest credit to the pathologist, who has positively demonstrated that many ovaries which were previously considered cystic are unquestionably normal and should under no circumstances be removed.

The strong conservative tendency of the present time also unquestionably emanates from the laboratory. If, therefore, I should designate what I personally consider the chief advance in gynecology in the last decade, I should certainly say that it has been along pathological lines.

Dr. Garrigues has very warmly championed the Alexander-Adams method of restoring the retroflexed and retroverted uterus to its normal position. While my personal experience has been entirely with the suspension operation, I have, notwithstanding, been much impressed during the last two or three years by the good reports made by numerous operators upon the method of shortening the round ligament through the inguinal canal. Within the last two days I have received a reprint from Krönig, one of the associates in Zweifel's clinic in Leipzig, in which he takes very positive grounds in favor of this operation. In the Leipzig clinic the results which first followed the adoption of this method were not satisfactory, but with improvements in the technique it has, according to Krönig, become the most satisfactory means of correcting this deformity, and they now report a large series of cases in which this method has been employed with good results.

Personally I feel that there are comparatively few cases of uncomplicated retrodeviation of the uterus which give sufficiently distressing symptoms to demand operation; therefore the operation must necessarily be limited in its scope. Even the most enthusiastic advocate of this method certainly can claim little or nothing for it when the uterus is adherent or when there is associated disease of the appendages. Under these circumstances only through an abdominal incision can satisfactory results be obtained.

The details which Dr. Garrigues has given us concerning his operations in general are interesting, and while, as some of the speakers have said, we may not agree with him in all of them, yet it is from the varying view-points developed in such discussions as this that the greatest improvements ultimately come.

DR. G. E. SHOEMAKER.—In agreeing with the other gentlemen who have expressed their appreciation of Dr. Garrigues' paper, I want to refer to one small point in which his opinion coincides with my own belief. He spoke of keeping patients in bed for three weeks. There are three good reasons for this, though it is not a universal custom:

1. The wound is not firmly and strongly united under about that length of time. If one has occasion to lay open an

aseptic wound at the end of two weeks, one can do it with a knife handle without the edge, and I do not believe that wounds are fit to stand the stretching from intra-abdominal pressure in the upright position at the end of two weeks.

2. There is a certain proportion of death from heart clot after abdominal operations. At a meeting of the American Gynecological Society two or three years ago a discussion brought out a surprising number of sudden and unexpected deaths from heart clot in the experience of members present. I have heard of a number of deaths from heart clot in other conditions, and it is to me significant that they were nearly all cases of a simple type and were doing perfectly well at the time of the accident. Quite a number of cases reported had exerted themselves in some way, as by getting up. Is it not exactly because these favorable cases are less likely to keep in bed or be kept there that the predominance of heart clot is seen among them? There will be found to be an appreciable mortality from early getting-up, though it may not appear in the comparatively small experience of any one man.

3. If operations generally were undertaken for simple conditions, perhaps long rests in bed would be less necessary, but in most cases there are complications. There may be adhesions or exudates, disordered bladder, thickened bowel, anemia, slow sepsis, all of which have existed for months prior to operation. I cannot see how we help the patient by hurrying her out of bed when she needs even more than three weeks there independent of her wound.

DR. PHILANDER A. HARRIS, of Paterson, N. J.—To hear the reader of the paper refer to his gray hairs as an evidence of advancing years, we might be more convinced with the evidence did we not know of the fidelity with which he attends the meetings in the interest of gynecology, his patience for the younger men, and his ability to describe almost every gynecological operation and give us ample evidence of his ability to perform them in a thoroughly practical and up-to-date manner. It is a great pleasure to look at the practical side of gynecology and to go back to the time before many of us undertook to do any gynecological work. It is really refreshing to turn away from work and go back over the old ground and remember the difficulties of those who had to bring gynecology to the point which it has reached.

DR. BROOKS H. WELLS.—There is one point in which Dr. Garrigues has done a great deal of work and which has not been mentioned in his paper. I refer to the fact that he was instrumental in introducing into New York, and practically into this country, aseptic and antiseptic treatment in the maternity hospitals. Dr. Garrigues took a service in the New York Maternity, which shortly before had been attended with an enormous mortality. Patients died in large percentage. For this various reasons were given. Old buildings were burned and new ones erected, but still the patients died. Dr. Garrigues brought into his service in the treatment of these

cases the principles which had been demonstrated some time before. His work brought about great improvements in maternity technique all over the country, and it may be regarded perhaps as the entering of aseptic and of the antiseptic régime in the treatment of obstetrical cases.

DR. J. W. BOVÉE, of Washington.—I have nothing of interest to add. I have been much pleased with Dr. Garrigues' paper. As some of the gentlemen said, we do not all follow the same line of technique. That practised by myself is a little different; being left-handed, I make my incision from below upward. I close the incision differently from Dr. Garrigues, closing the peritoneum, if there is a short incision, by a shoestring suture, leaving only one point for possible adhesions. I close both layers of the fascia by continuous catgut suture. I always use the subcuticular catgut. The abdomen is cleansed a second time after closing the fascia and wiped off with bichloride solution, putting on a piece of dry bichloride gauze 1:2000, which surrounds the wound one inch in every direction. Over that I put a dressing of sterilized collodion in which I soak some sterilized gauze. This thickness of gauze over the bichloride gauze is all the dressing my patients have. My patients get up and are about and go home in about three weeks. The dressing is taken off shortly before they go home. Even in bad pus cases this treatment has given me satisfaction. I have used this dressing for three years, except in cases in which the wound must be closed very rapidly. In such cases I use a through-and-through silkworm-gut suture, and do not stop to suture the fascia separately, but have an assistant hold that in apposition as I tie the sutures.

There are two points to which I would like to refer: one is the use of rubber gloves, in the use of which I thoroughly believe. We have just the same difficulty with our own skin as with the skin of the patient—we cannot keep it sterile. I have not opened an abdomen in two years without rubber gloves. They do not interfere with the tactile sensibility. I have no trouble in doing vaginal work with these gloves. Yesterday I opened two cases of pelvic abscess with these gloves. I do most of the work with forceps and scalpel. I make two incisions crosswise or antero-posteriorly behind the cervix with the sense of sight, and the work above that is done with the forceps.

The second point is in reference to the Alexander operation. I think there is a field for the Alexander operation, but I think it is much smaller than many think. Many conditions will interfere, tending to give bad results that would not otherwise occur. For instance, some patients have the habit of voiding urine too infrequently. The result is to throw the uterus back whenever the pessary is removed, whether it is six months or six years. Another cause is the constipation habit, which is going to push the cervix forward. A great deal of trouble with the treatment of displacement of the uterus is due to a lack of appreciation of the causes of this condition. The prin-

cial cause of uterine displacement, except constipation and a diseased bladder, is a faulty attachment of the ligaments to the uterus. I have seen such cases operated upon by shortening the round ligaments and suspensio uteri, and in both classes the uterus has been retroverted down over the vagina two years after the operation. The reason was the method of pulling these ligaments. Unless you change the leverage you will have retroversion, unless you fix the uterus to the abdominal wall. Therefore I believe that most of the displacements of the uterus for which the Alexander operation is designed are better treated by vaginal operation upon the ligament than upon the round ligaments extraperitoneal. In a large number of these patients we will find adhesions, not so much to the uterus as to the tubes and ovaries. These slight adhesions will probably undo the work done by the surgeon in shortening the round ligament.

DR. JOHN C. DA COSTA.—I think the Section is indebted to the doctor for the admirable manner in which he has shown us the various periods of gynecology.

Every man must make his own technique. I think every ounce of blood that is lost detracts so much from rapid recovery, and therefore it is my rule to tie an artery before cutting it.

In regard to the Alexander operation, I never considered it a thoroughly surgical one. Like the old Scotch surgeon, I want to know what I am doing. I have had such universal success with suspension of the uterus in cases of retroposition that I am satisfied not to adopt any other method. In doing the Alexander operation you do not see, when you lift up the uterus, whether you have torn adhesions or whether you will have hemorrhage or not. As has been stated this evening, the Alexander operation is not successful unless a pessary is worn for six months, but when suspension is done you break up the adhesions, see that there is no hemorrhage, and your patient is out of bed in a very short time. In a couple of months the patients are strong and the nervous symptoms have disappeared. My mode of closing the abdomen has been by the tier suture for a long while, and with catgut for the buried sutures. Last year, however, I had trouble from chromicized catgut which I had from New York. Since then I have gone back to the old custom of using very fine Chinese silk for the peritoneum, and uniting muscle and aponeurosis over it with a slightly stronger Chinese silk, taking care to approximate the aponeurosis very carefully. I take then a third suture of silver wire, which has served me better than anything else. The third suture goes through the skin, fat, through the aponeurosis, and more than half-way through the muscle. It reinforces the second suture and holds the aponeurosis close together, and I believe that if you get the aponeurosis tight you will have no hernia afterward.

The only bichloride I allow after the abdomen is opened is simply to wash off with after the operation is done. Before

closing I use strong alcohol and sponge each layer of the wound out until it is perfectly clean and dry.

When it comes to covering the wound, for three years past I have used nothing but silver foil over the wound; over that plain sterilized gauze. The binder is put on and the wound is not looked at for ten or twelve days. As a rule you find perfect union from end to end, without pus.

DR. GARRIGUES.—Mr. Chairman, I am glad that in the reading of the paper I have given the gentlemen of the Section an opportunity of telling us how they do their operations.

Though it does not belong to the paper, but has been mentioned by one of the gentlemen here, I should like to finish by some remarks about the time when antiseptic midwifery was introduced into the Maternity Hospital of New York. It was before that time a foregone conclusion that we had 4 per cent mortality. That increased to 8 per cent and then to 20 per cent. One out of every five of those who gave birth to a child in the Maternity Hospital lost her life. Under these conditions my service in the hospital began on the 1st of October, 1883. I prepared myself to meet this terrible foe by reading what I could find in literature on the subject. The condition was so terrible that the managers were quite willing to do for me what I wanted. One of the things determined upon was that there should be no communication between the different rooms. Doors were locked and sealed with adhesive plaster. The thorough disinfection of the hands of the doctors and nurses was introduced. That can be obtained just as well with the very inexpensive corrosive sublimate as with most of the proprietary substances. Besides attention to the cleanliness of the patient, much stress was laid upon the disinfection of all material that came in contact with the woman. Every application of every kind had to be disinfected with corrosive sublimate. The result was marvellous, because instead of the 20 per cent who died during the last month before the change was made in the treatment, we had four months in which we did not lose a single patient. That made a very great impression upon the public. The matter was laid before the County Medical Society, and the late Dr. Lusk adopted it immediately at the Emergency Hospital. It was adopted in Boston, and in a short time its adoption was general.

I must say that I do not claim any originality whatsoever. If I take any credit it was in knowing what was the thing to do and having a profound desire of meeting this terrible scourge.

DR. JOHN B. SHOBER.—I know I voice the sentiments of the Section in thanking Dr. Garrigues for his very interesting and inestimable paper.

TRANSACTIONS OF THE NEW YORK OBSTETRICAL SOCIETY.

Stated Meeting, May 8, 1900.

Vice-President H. J. BOLDT, M.D., in the Chair.

DR. A. BROTHERS presented a specimen of

GONORRHEAL PYOSALPINX

removed from a woman from whom he had taken the other tube three years ago for the same affection. During these three years she had been in perfect health until recently reinfected by her husband, who had contracted a fresh gonorrhea. Dr. Brothers presented the specimen to demonstrate that a woman with one tube infected with gonorrhea may, after its extirpation, remain in perfect health, as had this patient for three years, unless she becomes freshly infected.

DR. RALPH WALDO agreed with Dr. Brothers.

DR. H. J. BOLDT said that if the infection is due to gonorrhea, it is only a question of time when the patient would require another operation to be restored to health. He had found that by leaving one tube he is subsequently compelled to operate again.

DR. W. R. PRYOR presented an

OVARIAN DERMOID CYST WHICH HAD BEEN EXPELLED THROUGH THE RECTUM

by a woman in labor, whom he had seen later. It had obstructed labor, and, appearing at the rectum by a pedicle, the latter had been snipped, its end returning into the rectum. Adhering to the tumor were omentum and the Fallopian tube. The patient had complained of tenesmus for some time prior to her labor. There had never been any attempts at abortion or any hemorrhage.

DR. S. MARX spoke of a case of a woman, four or five months pregnant, with a retroverted uterus which had become incarcerated. The uterus was jammed between the rectum and vagina. In a short time ulceration occurred and a six-months fetus was expelled by the rectum.

DR. H. J. BOLDT presented a specimen of a uterus the seat of

ADENOCARCINOMA OF THE CORPOREAL ENDOMETRIUM; VAGINAL HYSTERECTOMY.

Patient æt. 40 years; had nine children, the last two and a half years ago. Menstruation had been regular in former

years; lately it had become irregular, at intervals of from two to three weeks; profuse; and during the intervals a sanguinopurulent discharge was present. An examination of the scrapings showed the typical picture of the disease. The uterus was retroflexed, freely movable, and its consistence diminished. In addition to the pelvic disturbance the patient complained of much gastric disturbance; pain after eating; occasionally vomiting; much tenderness upon pressure over the epigastrium, most marked at the fundus of the stomach; pressure at that point caused the pain to radiate toward the back. A gastric ulcer was suspected, but to ascertain this, and to feel assured that a concomitant cancer of the stomach was not the complication, a colleague was requested to examine the patient. Cancer of the stomach was excluded as the result of this examination. The position of the stomach could not be readily defined; it seemed very low down—an extreme degree of gastropotosis. To determine its outlines accurately, the stomach was moderately distended with carbonic acid gas, because it was believed that the ulcer was old and situated at the pylorus, causing more or less stenosis, which accounted for the dilatation of the stomach and the gastropotosis which was present. The ulcer which I suspected at the fundus was excluded by my consultant. Unfortunately this was a grave error, for as the result of the distension the patient had a severe attack of vomiting, accompanied and followed by a violent hemorrhage, to such an extent that she became nearly pulseless and required saline infusion. Under appropriate treatment she so far improved that the operation for the removal of the carcinomatous uterus was risked a week later. The condition of the patient being taken into consideration, it was determined to operate very rapidly and to avoid the use of ether or chloroform anesthesia, so as to prevent subsequent vomiting. Nitrous oxide and oxygen anesthesia was chosen, its administration attended by Dr. S. O. Goldan. The points of interest in the case centre in the form of anesthetic used and the superiority of clamps over ligatures in certain cases.

It is my opinion that deviation from the course pursued would have brought about a rapid fatal termination. As it was, the patient was conscious again within ten minutes after the anesthesia was started, the operation taking up but half of this time. I have had an opportunity to use this form of anesthesia in a number of desperate cases with utmost satisfaction, and most heartily commend it to the profession for general adoption in such unpromising cases.

DR. JOSEPH BRETTAUER said that he had seen several cases in which this combination anesthetic was used, and he had been much pleased with it. In one case a perineorrhaphy had been done three times, but the perineum had not healed because the patient had always vomited for two days after the use of ether and chloroform. He had employed nitrous oxide and oxygen and had secured a good result.

DR. BROTHERS had been impressed with the rapidity with

which the patient had passed into and emerged from the anesthetic condition when this anesthesia had been used.

DR. E. B. CRAGIN liked nitrous oxide and oxygen, but thought it should be used only when ether and chloroform are contra-indicated. He related a case in which vertigo lasting half an hour had followed the use of this anesthetic mixture.

DR. AUSTIN FLINT, JR., said that the late Dr. Lusk had frequently used nitrous oxide and oxygen. Relaxation of the abdominal walls was, however, sometimes difficult to obtain with this anesthetic, preventing delicate manipulations.

DR. BOLDT added that relaxation is not so free when nitrous oxide alone is used as when it is combined with oxygen. He had performed a three hour operation under its influence. In abdominal operations where large tumors distend the parietes this anesthetic can be used throughout. There is not sufficient relaxation for intrapelvic work, however. This form of anesthetic is especially indicated when ether or chloroform would be dangerous.

DR. BOLDT next showed a

DERMOID TUMOR OF THE OVARY WHICH HAD SIMPLY BEEN
EXCISED FROM THE CONVEX SURFACE OF AN OTHERWISE
HEALTHY OVARY.

A prettier specimen for conservative surgery than the one presented here cannot be conceived. As can be appreciated, the dermoid formed a beautiful summit on the convex surface of the posterior edge of the otherwise normal ovary, so that its removal by simple excision and subsequent suturing of the wound was readily accomplished. It was obtained from a girl, 22 years old, who had menstruated regularly from her thirteenth year; always had intense dysmenorrhea and lost very little blood during the flow. She had noticed an increase in the size of the abdomen for about one year, but it did not inconvenience her until five weeks prior to her consultation. The abdomen was distended by a large, apparently solid tumor which reached nearly to the ensiform cartilage. She was much emaciated and complained of intense pain over the entire abdomen, most marked, however, in the flanks. Operation proved the large tumor to be a multilocular colloid cystoma with very thick contents. On the opposite side was the dermoid shown. Convalescence was uninterrupted, despite the fact that the peritoneal cavity was soiled by the colloid contents of the large tumor and that the cavity was only wiped out without any washing. But seldom is any other procedure used, even if the peritoneal cavity is contaminated with pus.

He also showed a

UTERUS REMOVED BY VAGINAL HYSTERECTOMY FOR SARCOMA
OF THE ENDOMETRIUM.

The patient, 47 years old, a II para, had been troubled with atypical bleeding for ten weeks prior to operation, which could

not be controlled longer than three days at a time, no matter what form of treatment was employed. Previous to the almost continuous bleeding she had been troubled for some time with menorrhagia, which also resisted treatment and was ascribed to "change of life." Examination of the scrapings under the microscope showed sarcoma of the endometrium.

He next exhibited

THREE FIBROMYOMATOUS UTERI REMOVED BY ABDOMINAL HYSTERECTOMY.

The first, a pedunculated fibroid, was removed from a virgo intacta about 54 years old. She had passed the menopause about six years previously, and during the five or six months prior to operation had a moderate bloody discharge. In addition there was obstinate constipation, with marked pressure on the rectum when the bowels were moved by the use of enemata. There was also moderate pelvic pain for a number of years. Examination showed the cause of the pelvic and rectal symptoms to be a fibromyoma incarcerated in the true pelvis. No intrauterine examination was made to determine whether malignant disease was present. Abdominal section showed that the neoplasm could be readily removed by simply tying off the pedicle; but owing to the ignorance of the condition of the endometrium, and the fact that bleeding had started long after menstruation had ceased, it was thought wiser to make a radical operation. The cause of the sanguineous discharge was subsequently shown to be a cervical polypus. Recovery uninterrupted.

The second case is that of a virgo intacta, *æt.* 42 years, who had marked rectal and severe vesical symptoms, which had been gradually increasing in severity for the past six months. Pelvic pain was a concomitant symptom. One lobule of the fibroid was incarcerated in the pelvis, and the rest of the tumor pressed directly upon the bladder. Supravaginal hysterectomy was done.

The third specimen is the most interesting. The patient, above 40 years, had been suffering with intense pelvic pain about four years, which had during the past few months increased to such extent that the following of her avocation as cook became too arduous to continue. Her bowels never moved except by enemata or brisk cathartics, and then the evacuation was an intense torture. The interesting feature was that she had always menstruated regularly until November, when it abruptly ceased. Her breasts were large and emitted a good stream of milk upon pressure, so that a member of the house staff assured me by telephone that she was undoubtedly pregnant, despite her assurance that she had never exposed herself to such possibility. The neoplasm was so tightly impacted in the pelvis that it was impossible to budge it. In this instance panhysterectomy was performed. Both patients are convalescing without a symptom of illness.

I will add that I have made a large number of hysterectomies by total and supravaginal amputation, and that, so far as the direct mortality is concerned, there has been no difference; neither has there been any difference in the ultimate result on the pelvic floor. It may, however, be taken into serious consideration that in a goodly number of instances malignant disease has subsequently developed in the cervix, if this was left, so that I believe that total extirpation should have the preference.

DR. BROTHERS said he had seen a patient with fibroids of the uterus in whom the breasts secreted milk. The tumor was symmetrically enlarged, and he had to make a differential diagnosis between fibroids and pregnancy. He said pregnancy is not necessary to cause the breasts to secrete.

DR. CRAGIN narrated two cases, one of tumor of the ovary, the other of hemorrhage into the ovary, in both of which milk was secreted.

DR. MARX said that too much importance was attributed to milk in the breasts as a sign of pregnancy. Hegar's sign must be present, too, and the other signs of pregnancy. He wished to go on record as opposing the view that milk in the breasts is a critical sign of pregnancy.

DR. BOLDT, in closing, said that he did not consider milk secretion a critical sign of pregnancy.

DR. GEORGE W. JARMAN read the paper of the evening,

TUMORS COMPLICATING PREGNANCY, WITH REPORT OF CASES.

The first case was that of a woman who had an ovarian cyst which was removed when she was three months pregnant. She went to term and bore her child naturally. The second case was one in which the patient complained of pain during the second month of pregnancy. Examination revealed a tumor the size of a walnut, which rapidly increased in size. It was removed in the thirty-second week and proved to be a dermoid cyst. Three weeks later the patient suddenly went into labor and bore a child which died a few hours later. The third case was one of multiple fibroids, which did not interfere with labor except to produce a rather profuse hemorrhage which yielded easily to intrauterine injections of saline solution. The next case was one in which the patient was in an advanced stage of pulmonary tuberculosis and who complained of pain in the cul-de-sac early in her pregnancy. Labor was normal, but the second stage was precipitate. Immediately afterward the patient complained of great pain in the left diaphragmatic region. This persisted and the pulse jumped from 115 to 140. Abdominal distension appeared a few hours later and continually increased. For the next week the temperature reached 101° and the pulse varied between 115 and 120. Tubercular peritonitis was then diagnosed. On the thirteenth day post partum the patient complained of a sore spot over the umbilicus and a blister appeared, which was clipped by the

nurse with scissors. On opening it a loud report was heard, like an explosion, and a stream of water and feces was ejected. This flow continued for ten days, when the patient died. No autopsy could be obtained. The last case was one in which a patient noticed a tumor of increasing size in her fifth month of pregnancy. At operation it was found to be a pyonephrotic kidney, which was extirpated. The patient had a healthy child at term.

Dr. Jarman said that tumors which seem harmless early in pregnancy may be of serious import later by interference with labor. Ovarian cysts are liable to torsion of their pedicles. If the tumor is low in the pelvis it may be removed by vaginal section; those situated higher up, by laparotomy. Dermoid tumors are better attacked from above. Fibroids may be operated if they will palpably interfere with labor; and when they are interstitial, hysterectomy had better be performed rather than to allow the patient the risk of a Cesarean section at term. A pyosalpinx or ovarian abscess requires operation at any time during pregnancy that it is discovered, for fear of rupture at the time of labor. Dr. Jarman closed by urging the necessity of examination of pregnant women not only early in pregnancy, but later also, to eliminate tumors of the genital organs which will or may interfere with labor.

DR. JOSEPH BRETTAUER reported two cases of peritoneal hydronephrosis complicating pregnancy. In one he operated at the fifth month of pregnancy, as there was practically no renal substance left. The kidney was removed and the patient bore a healthy child at term. The second case was in a young woman whose appendix had been removed one year previous, but the pain for which the operation had been performed still continued. Early in her pregnancy the pain was more severe and was probably due to a movable kidney with partial obstruction near the pelvis. The patient was taken with great pain in her sixth month, and a fluctuating mass could then be felt, the size of a fetal head, just below the arch of the ribs. Two days later the patient went into labor and bore a six-months fetus. The mass persisted for some time, but the pain disappeared in a week. Within three months the tumor had disappeared entirely, and the patient has been well since.

DR. CRAGIN said that out of 2,000 cases at the Sloane Maternity but 14 had fibroids, and of these 7 had a normal delivery. Hemorrhage in these cases is due to lack of uterine contraction. Very frequently in the process of involution fibroids disappear. Three kinds of tumor seem to be the most frequent complicating pregnancy: 1. Simple cysts. 2. Dermoid cysts. 3. Congenital cystic kidney. Dr. Cragin related a case of dermoid cyst complicating pregnancy which had given rise to a seeming puerperal sepsis.

DR. WALDO related a case of sepsis and peritonitis following labor in which the autopsy disclosed a ruptured pyosalpinx.

DR. BROOKS H. WELLS said that it is not safe to puncture

cysts of this kind through the vagina, as the mortality is higher than when the operation is done from above. The cyst may be multilocular or papillomatous or dermoid, and sepsis and death will follow vaginal puncture very often. The technique of to-day renders the abdominal operation safer.

DR. FLINT related two cases, in one of which the patient had a normal delivery and on the third day developed sepsis. She ultimately recovered and a small ovarian cyst was found. The other patient went through a puerperium, and some time later a tumor was found in the cul de-sac. Regarding fibroids, Dr. Flint said that the results of Cesarean section when hysterectomy is performed are better than when conservative operations are done.

DR. CHARLES JEWETT said that during pregnancy operating through the abdomen entails less danger of miscarriage than removal through the cul-de-sac, no matter how easily accessible the tumor may be. In two recent cases pregnancy went to term undisturbed. The disadvantage for the vaginal operation is doubtless due to the mechanical violence inflicted upon the supravaginal portion of the cervix and the structures about it. At term abdominal section is better than interference below from the standpoint of infection. Uterine tumors demanding Cesarean section also call for hysterectomy.

DR. KREUTZMANN, of San Francisco, said that he had seen several tumors complicating pregnancy, and had noticed in ovarian tumors that the torsion of the pedicle was frequent.

DR. A. PALMER DUDLEY commended the reader of the paper for insisting upon examination of pregnant women. He said that he had called attention to the danger of puerperal fever due to accidental rupture of retained foci of infection within the pelvis, years ago. Speaking of careless examinations, he said that he had recently seen two cases of supposed puerperal infection, in one of which the patient had a lobar pneumonia, in the other an acute nephritis.

DR. JARMAN, in closing, agreed with Dr. Flint that hysterectomy was the operation to be performed when Cesarean section was found necessary on account of the presence of fibroids.

TRANSACTIONS OF THE WOMAN'S HOSPITAL SOCIETY.

Stated Meeting, April 24, 1900.

The President, JOSEPH E. JANVRIN, M.D., in the Chair.

SILK LIGATURE REMOVED FROM AN ABSCESS CAVITY.

DR. L. GRANT BALDWIN.—I have here a silk ligature removed from the centre of an abscess cavity two weeks ago. The history is as follows: The patient is 25 years old and sin-

gle. In October, 1897, she had performed upon her a salpingo-oöphorectomy, recovery from which was satisfactory in every way. Practically she was perfectly well until the 22d of February of this year, when she was taken with pain and aching in the left ovarian region. This grew worse, and her family physician treated her for a "cold." The pain was followed by high temperature, loss of strength and appetite, and after another week's time she was confined to her bed. At the end of seven weeks after the beginning of the symptoms, I saw her; at this time there was found a large, hard mass in the left side. The temperature was 102°, with a corresponding pulse rate. Curiously enough, I happened to know that the operator had used silk, and I made the diagnosis that probably a silk ligature was causing the trouble. She was opposed to further operative interference, so for a couple of weeks cold applications and the unguentum Credé were used. Two weeks ago thick pus was discharged, and, luckily enough, in the pus was found this ligature. The interesting part of it is that this ligature remained *in situ* twenty-four or thirty months and no trouble resulted, and then followed pronounced trouble. The silk is in a perfect state of preservation. The moral is that we should not use silk in the abdomen.

DR. CLARENCE R. HYDE.—I remember a case of panhysterectomy for fibroma in the Woman's Hospital in which, six months after operation, symptoms of acute peritonitis suddenly developed. There was marked suprapubic pain with fever and pulse. She recovered about one month afterward. One day while urinating she passed a silk ligature per urethram. I do not know whether an abscess had formed or not and by rupturing had produced the peritonitis. The patient has been perfectly well since. The silk was also in a perfect state of preservation.

DR. JOSEPH E. JANVRIN.—I recall a case in which the ligature passed through the bladder without any abscess formation so far as known. It never gave rise to any temperature; there was a great deal of pain, however. The ligature finally passed into the bladder and then was voided with the urine. That occurred fifteen years ago. In assisting my old preceptor, Dr. Peaslee, in performing ovariectomies, it was a common thing to leave the abdominal wound open for drainage, small glass drainage tubes being used for that purpose; this was twenty-five or thirty-five years ago. Silk and nothing else was used at that time. It was a common thing to have, following these operations, inflammation or peritonitis. Washing out the abdominal cavity was done for weeks, and in some cases for months, afterward with what was called "artificial serum," which was simply the saline solution of the present day. I have seen in some cases the ligature become detached and washed out; this happened in quite a number of instances. The little sinus would then heal up. I have never seen fatalities follow, even at that time, that could be absolutely traced to

the use of the ligature; but, of course, operations at that time were not done aseptically and peritonitis often followed.

DR. LE ROY BROWN.—In Dr. Cleveland's service at the Woman's Hospital the Skene electric clamp is frequently used for the pedicle. There is certainly a comfort in knowing that there is nothing left in the cavity in the way of a ligature.

DR. JOSEPH E. JANVRIN.—It has just occurred to me that, on account of the irritation of the ligatures, Dr. Peaslee some twenty-four years ago devised a hollow silver tube which had perforations through it; this tube to be introduced into the peritoneal cavity at the lower angle of the wound. The pedicle was then brought around that tube, transfixed and tied there through two of the little openings running through the hollow tube. The upper end of the tube had a little flange projecting outside the abdominal wall, and was secured there. The two ends of the ligature were brought outside the abdominal wound and were also secured there. At the end of forty-eight hours a scalpel, which fitted into the tube, was passed down, the loop severed, and the tube and ligature were withdrawn, leaving the pedicle to take care of itself. The results were always perfect.

DR. J. DOUGAL BISSELL.—Many overlook the fact that the pain following abdominal operations is often due to the retained silk ligatures. I have known operators who, several years after the removal of tube and ovaries, have operated again because of constant pain about the site of the old operation, and have given immediate relief by removing the silk used at the first operation. Catgut seems to be the ideal ligature. I think the time will come when silk in these operations will be discarded altogether. I believe that a well-made crusher, properly applied, will relieve us of the necessity of using either silk or catgut, except with large sinuses.

DR. L. GRANT BALDWIN.—I have not used silk in the abdomen for five years, and during that time I have never been disappointed in the use of catgut.

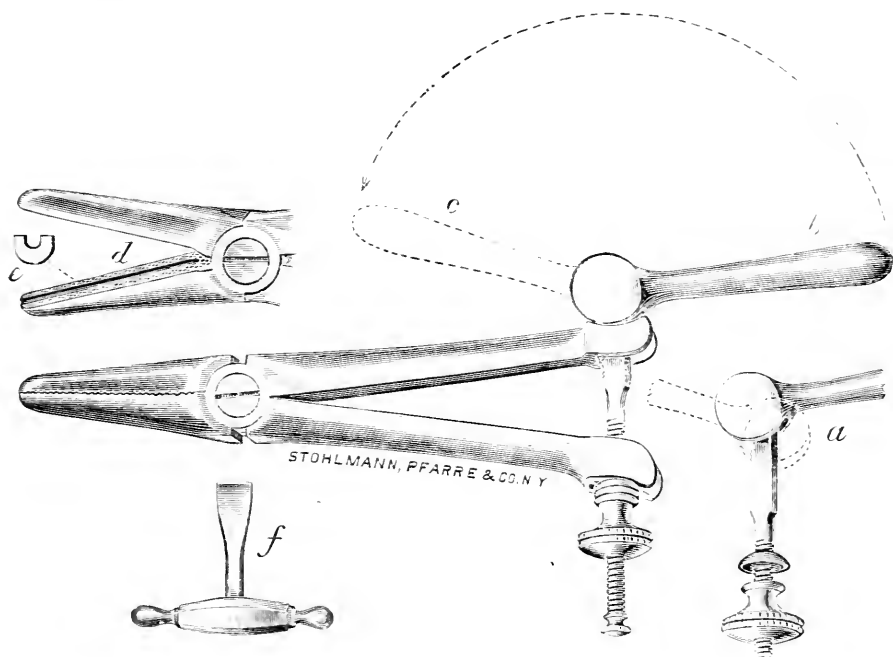
A NEW VASOTRIBE.

DR. LE ROY BROWN.—I wish to show a modification of Thumim's vasotribe that has been made for me by Stohlmann & Pfarre. This instrument has been used at the Woman's Hospital and elsewhere for almost a year and has given excellent satisfaction. I had the Thumim instrument which I show here brought over in 1899.

The instrument is a modification of that of Doyen, differing in the manner of applying the power and in its multiplication. Thumim has utilized the principle of the lever and eccentric, and obtains thereby a tenfold multiplication of power. The instrument, though an excellent one, still has some objections, which become evident after a short use.

With a wish to remedy these disadvantages and still to retain the essential features, I have devised the instrument I show you.

In this instrument, as in that of Thumim, the relation of the jaws of the clamp to the handles is as three to one. The vertical bar connecting the two hands is joined to the bars of the lever *b* by a heavy steel pin. This pin passes through the lever bar at its lower margin, and is four times nearer the handle bar when the lever is in the position of *b* than when it is at *c*. This is best understood by reference to the figure *a*. A force being applied to *b* to move it to *c* will approximate the handle bars of the clamp to the extent of the height the pin is raised by the eccentric. The relation between the length of the lever arm and the eccentric is as ten to one.



A force of 50 pounds applied to this lever will thus exert a pressure of 500 pounds on the handles of the clamp. This multiplied by 3, the relation between the handles and the jaws, will give a pressure of 1,500 pounds at the ends of the jaws. The actual demonstrated pressure obtained by this instrument is 1,400 pounds.

In the Thumim instrument the vertical bar connected with the lever arms has at its lower extremity a slot, which fits over a steel pin placed in the end of the corresponding arm of the clamp. In using the instrument, if the pedicle happened to be thick, considerable difficulty was experienced in closing the handle bars sufficiently to permit the slot to fit over the pin. The pressure also varied in proportion to the thickness of the

pedicle to be compressed. It was also found that after frequent sterilizations in boiling water the temper of the steel in the instrument was diminished, and that the same pressure could not be obtained as when the instrument was new. For these reasons I substituted for this bar with the slot a heavily threaded steel rod carrying a thumb screw and washer, and removed the pin from the lower handle of the clamp arm. The method of use is readily seen by reference to the cut. As I have stated, the clamp has given excellent satisfaction in my hands.

There is a certain unavoidable difficulty in forcing the lever arm to the new position *c*, on account of the great friction developed between the surfaces of the eccentric and the clamp arm on which it rests. With some practice and the use of gauze in the hands grasping the lever the difficulty is overcome. I personally like very much the length of jaw of this clamp, $2\frac{3}{4}$ inches, also its shape.

Dr. Bissell, who has devised a most admirable clamp, has lately brought to my notice some excellent new points on this subject. I hope he will favor us with them to-night.

DR. J. DOUGAL BISSELL.—Mr. President, I fear that I have but little new to add to-night. More than one and a half years ago I presented before this Society a paper describing the use of the small tissue crusher which I hold in my hand. Doyen should undoubtedly have the credit before all men in this work. Regarding the amount of pressure, this small instrument gives only 300 pounds. It has been used in but one case, but the result was satisfactory. The second instrument I show is made on the same plan, but is stronger and gives a pressure of 800 to 1,000 pounds. On the blades of this instrument I have adopted the double groove of the Doyen clamp.

The pin is not found in any other crusher and is placed there for two purposes—it prevents the tissues getting into the joint, thus escaping pressure, and it prevents the blades from sliding over each other.

With regard to the theory of the action of the instrument on tissue, I have nothing new to present. The idea I want especially to draw attention to this evening is this: We have seen failures with the use of Dr. Skene's electric clamp, also with Tuffier's and Thumim's instrument, but, to my mind, these failures were not due to the method, but to the manner of applying the instruments. These failures have happened more often in removing tubes and ovaries than in taking out uteri; and I believe it is because the tissues crushed were not uniform in thickness when the tube and broad ligaments are taken up together and crushed or baked. The vessels in the broad ligament are likely to escape the requisite pressure or heat because they are more or less protected by the thickness and resisting power of the tube. I have never had bleeding from the tubes or ovaries, because I always crush twice—first the broad ligament and then the tubes. I have experimented outside of the body with the tube

and broad ligament, and found that after crushing them together I could force blood through the small vessels of the broad ligament. I am therefore convinced that if we crush separately the tube and broad ligament no trouble will follow. I have done this in the living subject many times with happy results. I am convinced that this is the reason why we have trouble in removing tubes and ovaries and have no trouble in doing hysterectomies, for in the latter there is uniformity in the thickness of the tissues crushed. In releasing the instrument it should be first firmly grasped at the extreme end of handles, then push up the ratchet. In cutting the tissue I think it is well to cut a little in advance of the surface of the blades. I have seen more than once compressed tissue separate. I believe that by leaving a piece of tissue uncrushed it will tend to hold the surfaces together and act as another barrier to prevent leakage of venous blood. It is important also to cut up to, but not beyond, the point of the blades. I have had only one accident in all my operations. One artery gave way; it was the uterine. The peculiar structure of the fibroid uterus operated upon was such that I was compelled to go out into the pelvic floor and include a very considerable quantity of tissue in order to get around the large fibroid mass. I included too much tissue and consequently the requisite pressure was not exerted upon all the vessels. The bleeding vessel was immediately secured with small catgut.

We have not said anything to-night in regard to the convalescence of patients where the crushers have been used. It has been my experience that the patients suffer less than when ligatures are used, and their convalescence is more rapid.

In regard to venous sinuses, it is my custom to take a No. 2 catgut ligature and pass it around the sinus. I secure these large sinuses alone, so as not to occasion any dragging or pain, as will result when the whole broad ligament is taken up and tied together.

DR. LE ROY BROUN.—The chief cause of bleeding is that the sharp edges of the instrument cut the tissues instead of lacerating the internal and middle coats. If such happens they will always bleed, and at the junction of the compressed with the healthy tissues. The instrument maker should be impressed with this point, in order to prevent such an occurrence. This happened in using Dr. Skene's instrument, so the edges were rounded off with a file, and now there is no bleeding. Bleeding occurred between the seared stump and the sharp margin of healthy tissue. I like the shape and length of the Doyen blade; there is no danger of cutting beyond the end. The objection to the instrument is that it is difficult to throw the lever over. I am accustomed to it. I generally use a towel.

In vaginal hysterectomies the uterine arteries are compressed with this clamp; the tubes and ovaries are then brought down and Skene's clamp used; the pedicle is then held down until packing is placed above it, the idea being that,

on account of the germicidal qualities of the heat in the electric clamp and the possibility of pus tubes being present, good will result.

The object of using the Skene electric clamp on the ovarian pedicle in preference to the vasotribe is its germicidal qualities from the heat, there being usually pus tubes when the hysterectomy is done.

Official Transactions.

CLARENCE REGINALD HYDE,
Secretary.

TRANSACTIONS OF THE WASHINGTON OBSTETRICAL AND GYNECOLOGICAL SOCIETY.

Stated Meeting, January 3, 1900.

The President, S. S. ADAMS, M.D., in the Chair.

DR. J. WESLEY BOVÉE showed

A CANCER OF THE UTERUS AND A DETACHED FIBROID.

DR. I. S. STONE said he disagreed with Dr. Bovée as to the pathology of the detached fibroid. It may have been pulled off by adhesions, but he thought it an open question.

DR. BOVÉE said he had looked up the question carefully and had formed this conclusion. He had not found a case of a fibroid of the Fallopian tube with a pedicle.

DR. EDWARD A. BALLOCH read a paper entitled

HERNIA IN CHILDREN.¹

DR. J. FORD THOMPSON said the subject of hernia is exceedingly interesting and important in all ages. Umbilical hernia seldom requires operation. A broad band of adhesive plaster and a cork is usually all that is required for a cure. Femoral hernia is exceedingly rare in children; he would suggest operating. Between cyst of the cord and hernia he would think the diagnosis easy, if he did not see so many mistakes. Hydrocele is not reducible; cyst of the cord may be pushed up, but it immediately reappears. There is no pedicle to a hernia.

The radical cure has been adopted for adults and conservatism for children. He saw Bull and Coley operate on children of 6 years, and both said the hernia was of the acquired type. He considered the majority of cases in children congenital. He did not see why a surgeon should hesitate to operate on children, though there is a natural tendency toward recovery which he has seen in a few. He usually recommended a truss, but frequently finds a truss no good in a certain case. He asked Bull and Coley on what class of patients they operated and on what they put a truss, but he considered their answer

¹ See original article, p. 206.

unsatisfactory; but by observing their cases he saw no difference. A hernia in a child is always an anxiety and debars him from entering the army or navy and other walks of life, and he should be given the opportunity of an operation. Opinion is changing; parents wish their children cured, and now operations present a different point of view. Before Bassini there were only fifty per cent of cures. Bassini's operation is much more difficult than is admitted. The separation of the sac in a congenital hernia is a very difficult procedure; it can be done much more readily by beginning high up. There has been much discussion as to the transplanting of the cord. He did not see why it should be thrown in front in an unnatural position. He said that accidents frequently follow Halsted's operation, as atrophy of the testicle. A mistake is frequently made in closing the canal. The conjoined tendon should be attached to the deep layer of Poupart's ligament and by two layers of sutures not on the same plane. He had never seen but one relapse in a child, and that in a slight degree, due probably to a fault in the technique. Bassini now uses kangaroo tendon, as does also Coley. If catgut is properly chromicized it is just as good. He did not like silver wire as used by Halsted. Dr. Thompson thought the operation had nearly arrived at perfection. The transplantation of the cord is not of material importance, though if it causes no accident it is probably the best theory.

DR. VAUGHN said the treatment of hernia in children is most important. It can be cured by operation with less danger to life and results more certain. He was in favor of operating at the fifth year, if they have not become well before. Femoral hernia should have operative interference, for it is never cured otherwise. If the testicle is undescended he operates immediately. Bassini's is the best operation, but to Massey, of Boston, he thinks should be the credit of elaborating this operation, as published in the *Journal of the American Medical Association*, 1887-1888, almost before Bassini had published his, and it is nearly the same operation. Compared with Bassini's, he thought Halsted's much inferior. Halsted cut across the muscle, which makes the hernia more liable to recur, and harder to cure when it does. Bassini comes nearer to bringing the parts into a normal position. He considered the operation in children safe, and he had never lost a case. He appreciated what Dr. Thompson had said about separating the cord, and considered his method of beginning up high good. He frequently cuts the sac in two and strips up enough to tie.

DR. A. R. SHANDS showed a photograph of a child 10 months old who had an umbilical hernia as large as a goose egg and two inguinal hernias reaching to the knees, all of which were cured by well-fitting trusses. He considered this an example of faithful perseverance with the truss. Bull estimated that eighty per cent of children were cured before the tenth year. Dr. Shands considered the prospect of curing a child under 10 years good, and said the truss was better worn

too long. The real success of Bassini's operation is primary union and ligating the sac high up. Kangaroo tendon is a good suture, though he had seen silver wire used three times in children successfully. He had seen two cases of strangulation, both reduced under ether. He considered it not wise to attempt reduction under anesthesia without being ready to operate. A little traction on the hernia and feeding it back is often successful. Brant reported a mortality of 3.08 per cent in children. He thought taxis should not be tried if it had been previously employed and the hernia had remained unreduced for twenty-four hours.

DR. A. A. SNYDER said he was in favor of a modification of Macewen's with a purse string suture. He believed in the use of silver wire, especially in adults, and also silver foil as a dressing, which is antiseptic in itself. In doing the operation he thought we did not begin the operation up high enough to get plenty of room and tissue.

DR. W. S. BOWEN asked if the Berlin wool does keep up hernia. He had seen it used in several cases. In one case he was called in after another physician had applied this form of truss, and could not see how it could do any good, though the hernia never reappeared. Dr. Bowen cited a case he had seen the day before with a history of a lump suddenly appearing in the inguinal region, but it had disappeared before he saw it. He asked if it would have been wise to apply a truss to so young a child (4 months).

DR. S. S. ADAMS said he did not agree with Dr. Thompson as to the ease in the diagnosis of hernia and cyst of the cord.

DR. BALLOCH said he agreed with Dr. Thompson that trusses are often applied wrongly and do harm. He had seen one case of strangulated hernia in a child. In answer to Dr. Bowen, he said it was best to be sure that some form of hernia existed and to apply some form of truss. Berlin wool is passed around the leg and put through the loop so the knot will cover the hernia. Some cases will get along without any appliance.

TRANSACTIONS OF THE OBSTETRICAL SOCIETY OF LONDON.

Meeting of June 6, 1900.

MR. ALBAN DORAN, F.R.C.S., *President, in the Chair.*

THE PRESIDENT, MR. ALBAN DORAN, read a paper on

A CASE OF EXTRAUTERINE GESTATION IN WHICH FETAL
DEATH OCCURRED AT THE EIGHTH MONTH AFTER
SPURIOUS LABOR; ABDOMINAL SECTION TWO
MONTHS LATER.

The patient, age 34, became pregnant for the fifth time, after an interval of four years, in February, 1899. Abdominal pains occurred early; diarrhea caused trouble from July to the

end of October, when labor pains and hemorrhage set in, followed by septic symptoms. The outline of a fetus could plainly be felt through the parietes. On December 12 it was removed by abdominal section. It was very fetid and had developed in the posterior layer of the right broad ligament. The sac was packed with gauze for a few days and then drained; the placenta came away in fragments. A fecal fistula developed and discharged for a few weeks. For six weeks the patient did very well, then symptoms of chronic obstruction with great emaciation set in, and she died in the ninth week after operation, flatus passing to the last. Several coils of small intestine had been dragged upon by the contraction of the sac; the adhesions involved several surfaces of mesentery, which seemed to account for the emaciation, strongly marked in this case where there was but little vomiting or distension.

The author dwelt on the infection of the sac, especially common in posterior tubo-ligamentary pregnancy (Taylor), on the diarrhea observed when placenta is attached to intestine (Freund), and on the inanition caused by the changes noted in this case. As there is no true sac wall inferiorly in this form of ectopic gestation, complete extirpation of the sac seems hardly possible. He dwelt on Dunning's case and on those collected by Jayle and Delherm. and expressed doubts as to the precise anatomical character of the sac in some of those cases. Finally, the author agreed with Taylor in preferring to pack and drain the sac, but did not know of any method of dressing which can obviate the dangers which follow the contraction of the sac wall.

MR. BUTLER SMYTHE said that in this particular case the fetid contents of the sac would alone have prevented any attempt at enucleation. He considered that the patient's life had been prolonged owing to the treatment adopted by Mr. Doran, who repeatedly washed out the sac with a strong solution of iodine before closing the wound. He (Mr. Butler Smythe) advocated this method in all similar cases.

DR. C. J. CULLINGWORTH congratulated the President on his paper and wished to indorse his opinion of the great value of Mr. J. W. Taylor's recent work on extrauterine gestation. He agreed with him that although the ideal method of dealing with the sac was to remove it, there were cases, such as the one under discussion, where such a procedure was impracticable. If the sac were left free drainage was important, but he disapproved of packing the cavity with gauze, especially in the case of a necrotic gestation sac. Gauze packing was, however, useful for checking hemorrhage or for the prevention of secondary hemorrhage. He considered that antiseptic irrigation of a necrotic gestation sac might temporarily deodorize but could not disinfect its walls. Moreover, irrigation had its dangers, and putrid matter might be carried through lesions in the continuity of the sac wall to adjacent structures. Irrigation, as a routine practice in gynecological surgery, should

be less generally adopted. He considered that Freund's view, which the author had adopted, that the diarrhea in these cases was an indication that the placenta was attached to the intestine, was not always correct, and that the diarrhea was partly the result of irritation from pressure and was partly one of the symptoms of septic infection.

This case bore out his opinion that spontaneous closure of fecal fistulæ may always be reasonably hoped for when they are not too low down in the rectum and when the subjects are free from tubercle or malignant disease. He did not believe that this patient's life could have been saved by any treatment.

MR. J. D. MALCOLM had seen the patient before and during the operation, and thought that Mr. Doran had, if anything, understated her extreme emaciation and debility. The development of fecal fistulæ within a few days of the operation proved that it would have been impossible to remove the sac. He agreed with Dr. Cullingworth that washing out the abdomen was done too frequently, but in this case, with a putrid cavity and much sloughing placental tissue on its walls, it was most necessary.

As regards the mode of death, judging by the alternate distension and flattening of the abdomen, he thought there must have been an escape of gas from the upper bowel as long as the patient lived. Thus the symptoms were not those of obstruction of the bowels, although an obstruction, with a fistula, actually existed, and death was due to exhaustion and malnutrition.

DR. ROBERT BOXALL had twice seen a fecal fistula heal in the same patient when in a serious condition of ill health from a suppurating dermoid tumor. It is an important fact that such fistulæ will sometimes heal even when the patient is seriously ill. He suggested that a rubber bag, like a child's balloon, might with advantage be substituted for gauze packing. By attaching a tube and funnel and filling with solution, pressure could be regulated to a nicety. It could be emptied by siphoning out the fluid and easily refilled, thus avoiding the disadvantages of repacking.

THE PRESIDENT noted that Tait's "abdominal pregnancy" "was a tertiary change," as Taylor had ably demonstrated; a tubal sac burst in the first place, between the layers of the broad ligament, and afterward this secondary intraligamentary pregnancy burst into the peritoneal cavity. Taylor distinguished a more frequent secondary form of abdominal pregnancy. The President's own case was one of the typical "posterior tubo-ligamentary" varieties of Taylor. He was relieved to find that the Society supported him in his opinion that no attempt should have been made to remove the sac. In his case the diarrhea prevailed before the death of the fetus, and the placenta was, in fact, attached to the rectum; these facts supported Freund's theory. Pure tincture of iodine, as Mr. Butler Smythe observed, was an excellent application for

an irremovable fetid cyst wall. He was compelled to wash out the sac freely on account of the fragments of placenta and fecal matter which it contained. Antiseptic lotions stimulated the exposed tissues and caused granulations to develop; yet ulceration or sloughing might occur in very sickly cases, as Dr. Cullingworth, who objected to lotions, implied. He had removed the packing within a few days. Dr. Boxall's suggestion that the sac might be prevented from too rapid contraction by means of an inflatable thin rubber bag seemed worth a trial. The fistula was low down in the rectum. In conclusion, the President feared that the operator must still depend more than he cared for on luck, as no certain method of preventing the dangers due to contraction of an irremovable sac of this kind was at the operator's disposal.

The following specimens were shown: DR. W. S. A. GRIF-FITH: (1) Squamous-celled epithelioma of the cervix uteri in a very early stage; (2) Squamous-celled epithelioma invading surrounding tissues like a columnar-celled variety. DR. H. RUSSELL ANDREWS: Sarcoma of the uterus. DR. HUBERT ROBERTS: (1) Large cystic fibromyoma of cervix uteri; (2) Microscopical sections illustrating various forms of uterine adenoma.

BRIEF OF CURRENT LITERATURE.

OBSTETRICS.

Retention and Incarceration of a Dead Fetus in the Uterine Cavity.—Francesco Landucci¹ reports a case in which the fetus was retained and underwent putrefaction, giving rise to inflammatory symptoms and uterine reaction leading to the formation of abscesses, to perforation of the uterus, and to a utero-rectal fistula through which were eliminated many small bones. Cauterization of the cervical canal by the production of adhesions completed the incarceration of the fetal residua and made of the uterus a sort of cloaca in communication with the intestines, giving rise to the gravest symptoms of absorption. The case goes to prove that even without any special mechanical obstacle a dead fetus may be retained in the uterus long beyond the natural end of pregnancy; that, in spite of this retention, with its local and general consequences, menstruation may go on with regularity and prove an important factor in clouding the diagnosis; that a utero-rectal fistula, produced as a final result of the putrefaction of the fetus in utero, may for a long time be occluded by the bones which are being eliminated through it and remain concealed; that the objective signs of fetal retention may sometimes be overlooked when the previous history and symptoms are not such as to call attention to them, and may finally become so slight that a

diagnosis is extremely difficult. Finally, the results of operation obtained in this case show that uterine fistulæ may be benefited and finally obliterated by artificial contraction of the muscle fibres, produced by the continued administration of ergotin; and that in a relatively short space of time the uterus may be restored to its normal condition and functioning powers, in spite of the severest lesions.

Retrodeviations of the Gravid Uterus.—L. M. Bossi¹ believes that this form of displacement is more common in pregnancy than is generally supposed and that it is the cause of many abortions. The reduction of the gravid uterus as soon as the diagnosis of a decided retrodeviation is made, with the insertion of a suitable pessary to be left in place until about the beginning of the fifth month of gestation, is an innocuous intervention, and, if done in time, a sure means of preventing incarceration and abortion. While in some cases the displacement may have pre-existed, in others it is due to the increased weight of the uterus in gestation and the greater extensibility of the ligaments. To prevent a return of the trouble, the pessary can be reinserted from the eighth to the twentieth day after delivery, not only without injury, but with decided benefit.

Strangulation of the Umbilical Cord by Amniotic Bridle.—A. Couvelaire² describes the case of a well-developed fetus which suddenly died during labor. The cord was found to be strangled by an interamniotic bridle which was wound about it three times and knotted. Such an occurrence is rare. Braun, of Vienna, reports two cases, Pinard and Varnier one. The author advances no theory in regard to the formation of the bridles, but merely states the fact.

Hemorrhages in the Third Stage of Labor.—M. Pinard,³ in a clinical lecture, says that expulsion of the placenta as soon as five minutes after delivery of the child is never favorable, whether it be spontaneous or artificially induced. Portions of the placenta or membranes are liable to be left behind, and there is apt to be hemorrhage. He cautions practitioners against judging of the amount of the hemorrhage by the amount of blood expelled; the only reliable symptom is the pulse. As to the predisposition of certain patients to post-partum hemorrhages, the author does not believe that those suffering from albuminuria are more likely than others to suffer in this way. Cardiac patients certainly are predisposed to hemorrhage during the placental stage and during pregnancy as well. Multiparæ who have had functional impotence during previous labors, and those who have had multiple pregnancies, dropsy of the amnion or a specially large fetus or placenta, rapid expulsion of the placenta, or patients suffering from nervous shock, may all be subject to hemorrhage. The physician's hands and forearms should be absolutely aseptic, and water heated to 122° F. should be at hand, as well as a flat glass uterine catheter. The use of this hot water will suffice to stop the hemorrhage, and, providing that its use be not

delayed until the patient has lost too great an amount of blood, her life can certainly be saved.

Sugar in the Urine during Pregnancy and the Puerperium.—Giuseppe Cristalli¹ states that a careful distinction must be made between glycosuria and lactosuria, as they do not possess at all the same significance.

A. Glycosuria.—1. Toward the later months of pregnancy it is not unusual to find glucose in the urine, recognizable by its characteristic reactions and by its property of fermenting with the yeast of beer.

2. An amount of glucose so small as to be scarcely appreciable has no clinical significance, and may be attributed to the slowing in the nutritive exchanges incident to pregnancy.

3. Larger amounts of glucose may, until the contrary is proved, be attributed to disturbances in the hepatic cells, which under certain conditions may have lost their power of polymerization on the sugar which is brought to them from the intestinal tract, this sugar being then thrown off in the urine. Glycosuria will therefore be a valuable guide to the condition of the liver.

4. In nearly every case patients who had glycosuria in the later months of pregnancy had exhibited the following symptoms, especially in the early months: vomiting, dizziness, true syncope, headaches—chiefly frontal—all pointing to a toxic condition of the organism.

5. When there is albuminuria, hepatic insufficiency, although present, may not be shown by glycosuria, from impermeability of the renal fillet.

6. In some of the patients who aborted or were threatened with abortion, a fair amount or else mere traces of glucose were found in the urine. The number of cases was too small to warrant any positive deductions, but the fact is of interest.

7. The patients who had glycosuria during pregnancy almost constantly had lactosuria in the first few days after labor; moreover, infarcts of old or of recent formation were nearly always found on their placentæ.

B. Lactosuria.—1. This is observed in nearly all women in the puerperal period, provided that the secretion of milk is established and the kidney permeable.

2. Its coexistence with glycosuria is not infrequent.

3. It is in direct relation to the mammary secretion.

4. Its importance is slight and altogether secondary to that of glycosuria.

Reflex and Electrical Excitability in Pregnancy.—Enrico Tridondani² finds the following modifications in reflex excitability. The superficial reflexes are perceptibly diminished, with the exception of the abdominal reflex, which is a trifle increased, especially in primiparæ. The deep or tendinous reflexes, especially the patellar reflex, are increased. The pharyngeal reflex is weakened, and so is the papillary, the latter being accompanied by Argyll-Robertson symptoms. Electric al (faradic) excitability is perceptibly and constantly

diminished. All these modifications are more marked in primiparæ than in multiparæ, and increase with the advance of pregnancy. Both reflex and electrical excitability returns to normal about ten days after labor.

Immediate Mechanical Instrumental Dilatation of the Cervix.—L. M. Bossi⁶ thus sums up a long and detailed article on the subject: 1. By immediate mechanical dilatation of the cervix in obstetrics is meant the process which places in the hands of the obstetrician a means of dilatation sufficient to extract the fetus at any period of gestation, and *whatever the conditions of softening, shortening, or dilatation of the cervix* (not excluding the non-dilated and non-shortened cervix of primiparæ), taking as much or as little time for the process as the conditions indicate.

2. Before 1889 there was no instrument which allowed of varying the time according to the urgency of the indications and whatever the conditions of the cervix, so as to extract a well-developed fetus at term, if desired. The author, therefore, claims priority for his process and for the principles upon which it is founded, viz.: (a) that in immediate instrumental dilatation there is not only the dynamic action of a foreign body, but other less generally recognized dynamic action, based upon the fact that eccentric distension of the walls of the cervix at any period of pregnancy or of the puerperium induces contractions whose energy is in proportion to the force of the distension; (b) that the cervix may be mechanically and *immediately* dilated to a sufficient extent to extract a fully developed fetus.

3. The dilatation by means of the author's instrument (fully described in the article) does not wound the vagina, may be applied with certainty of success at any period of pregnancy, dilates the cervix in from fifteen to twenty minutes if necessary, provokes uterine contractions that can be increased or diminished at will, and does not cause a greater percentage of lacerations than does normal labor, provided that the dilatation be performed gently, gradually, and intelligently.

4. The many clinical data given show that immediate mechanical dilatation should be preferred to Cesarean section in urgent cases in which manual dilatation and other processes are not successful, and in which the lives of the fetus and mother are compromised by the delay, viz.: *I. Artificial provocation of premature labor.* Cases in which other measures used are slow or uncertain, and where the surroundings are not sufficiently aseptic or clean to give good results from the use of laminaria and tupelo tents, sounds, Barnes' dilators, etc.; whenever, in fact, haste is indicated. *II. Forced labor* (including the extraction of the fetus when the mother is dead or dying, in place of postpartum Cesarean section): (a) In grave cases of eclampsia in which the lives of mother and fetus depend upon the rapidity of the intervention and in which manual dilatation is not successful. (b) Cases in which the life of the mother is endangered and the indications are to

empty the uterus, and in cases of heart disease, tuberculosis, dead and putrefied fetus, etc. (c) When the life of the fetus depends upon the rapidity of extraction. (d) In cases of placenta previa. (e) Cases of anatomical cervical stenosis with undue prolongation of labor. (f) In cicatricial stenosis of the cervix mechanical dilatation should be attempted before incisions or Cesarean section are resorted to. *III. Incarcerated placenta from uterine tetany.*

Hysterical Gravid Uterus.—Under this title Ott⁷ describes certain phenomena observed in an VIIIpara who possessed the regular stigmata of hysteria and whose seven previous labors had been normal. Called to see the patient nearly at term, he found rhythmical contractions of the upper segment only of the uterus, fetus in R. O. A. position. On each side of the median line was a small area, light pressure over which would cause the contractions of the upper portion of the uterus while the cervix remained unchanged. These conditions continued for four days, during which time the patient took large doses of bromide. Natural labor pains then began, and within three hours a normal child was born.

Typhoid Fever during Pregnancy.—Chambrelent⁸ relates the history of a case of labor occurring at eight and one-half months during the early part of typhoid fever, four days after the onset of symptoms. The child remained healthy; its blood showed no Widal's reaction.

Ectopic Gestation.—Bégouin⁹ presents notes of what was apparently the third ectopic pregnancy in a woman 28 years of age, who had had a normal pregnancy at the age of 23 with eclampsia accompanying labor. At 26 she passed one period, had a sudden severe pain in the lower part of the abdomen, then flowed freely and passed what was described as clots and skin. One year later, after an interval of perfect local and general health, the same symptoms, but much more severe, occurred, and there were signs of a small retrouterine hematocoele. The third attack was diagnosed before rupture, which occurred within a few hours. Operation showed an ectopic pregnancy of two and one-half months, with intraperitoneal rupture. Recovery.

Fibrosarcoma of the Ilium complicating Pregnancy.—Lauwers⁹ has extirpated a large fibrosarcoma which was firmly adherent to the crest of the right ilium, the posterior abdominal wall, and by a prolongation over the crural ring to the fascia lata about four inches below Poupart's ligament. The woman being pregnant, an abortion at the fourth month occurred within a few days. The immediate results were otherwise entirely satisfactory.

Congenital Longitudinal Septum of the Vagina complicating Labor.—Vermersch and Bué¹⁰ report a case of congenital longitudinal septum near the upper portion of the vagina. The abnormality was discovered when dilatation of the cervix made no progress. Upon attempting to bring down a lower extremity of the fetus, the case being a breech presen-

tation, it was found that the fetus was astride a septum whose thickness and rigidity prevented its rupture or displacement. After ligation of its extremities the septum was excised and labor terminated normally.

Rupture of the Membranes in Normal Labor.—By coloring the portion of the membranes presenting through the partially dilated cervix by means of potassium ferrocyanide followed by perchloride of iron, G. Fieux⁶ found that in 10 out of 15 cases the stained portion was missing or was in small detached fragments after labor, showing that the membranes usually rupture by circular separation of the portion protruding through the os.

Monstrosities.—Andérodias¹¹ reports a case of meningocele which obstructed labor temporarily, preventing internal rotation. Child still-born, though living before expulsion.

A case of marked deformity is recorded by J. Gourdon.¹¹ In addition to slight abnormality of one hand and nearly complete absence of the other forearm and hand, the chief point of interest was the apparent absence of femurs. These were shown by the X-ray to be represented by only small spheroidal masses of bone. The child was living and healthy at 22 months. No cause for deformity was known.

Twin Pregnancy; Retention of Second Fetus.—Chambrelent¹¹ has observed a case of twin pregnancy in which, twenty-four hours after the birth of the first child, the midwife, failing to deliver the placenta, discovered the presence of a second fetus whose arm had prolapsed. When seen by Chambrelent, thirty-two hours after the first birth, the cervix was firmly closed, but the second fetus had not caused manifest uterine contractions. Chloroform, manual dilatation, version, and forceps to the after-coming head completed the delivery of a dead child slightly macerated.

Retention of Dead Fetus.—M. Chaleix-Vivie¹¹ describes such a case, with symptoms due to absorption, uterine pains, and foul discharge. Manual dilatation, rupture of the membranes, and delivery of a macerated fetus. On two occasions there were subsequently sudden rise of temperature, severe pain in the hepatic region, jaundice, and marked enlargement of the liver, but no further uterine symptoms. Within eight days after the second of these attacks the liver had regained its normal size, after reaching eleven centimetres below the free border of the ribs, and recovery followed.

Acetonuria during Pregnancy, Labor, and the Puerperium.—I. Rousse¹² has conducted a series of analyses of the urine of 53 women before, during, and after labor, with a view to ascertaining the significance of the presence of acetone. In all cases the urine was distilled and the test of Lieben employed, supplemented often by that of Von Gunning and at times by that of Legal. He concludes that there is a slight normal acetonuria, not necessarily characteristic of pregnancy, varying in different persons and in the same persons from day to day. Occasionally there is a temporary absence of acetone.

A manifest increase or even abundance of acetone was noted at intervals during normal pregnancy for one, two, or three days without known cause or unusual symptoms. In 59 per cent of Rousse's 51 cases the elimination of acetone was markedly increased during labor, and this was most striking when labor was prolonged. During the puerperium acetoneuria was increased within the first three days in 73 per cent, most frequently during the first day, this augmentation lasting from one to three days. An occasional increase occurred later than the third day, but this seemed no more than the irregular changes during pregnancy. Lactation appeared to have no influence upon the elimination of acetone. Primiparity appeared to increase the quantity during labor and subsequently, probably by increasing the duration of labor. Operative intervention, fever, albuminuria, and eclampsia did not alter the amount of acetone eliminated, but such cases were too few to be conclusive. In 3 cases of expulsion of a dead and macerated fetus the quantity of acetone excreted was no greater than normal. Analysis of amniotic fluid in 28 cases showed the presence of a small or even abundant quantity of acetone at the time of rupture of the membranes.

GYNECOLOGY AND ABDOMINAL SURGERY.

Uterine Fibroids.—Chavannaz¹¹ records a total abdominal hysterectomy upon a case of interstitial fibroid of the uterus accompanied by almost constant severe pain. After the operation a marked cardiac arrhythmia, which had occasioned anxiety in administration of chloroform, disappeared.

P. G. Spinelli¹ writes of the immediate and remote results of hysterectomy performed by Zweifel's method. The immediate results are absolutely innocuous. In 26 cases the author had 26 recoveries, although the tumors were large or there were symptoms of grave anemia due to profuse metrorrhagia. Although recovery was complete, in some of the cases there were fever and symptoms of suppuration of the pedicle. As to the remote results, the cases were followed for from a few months to six years after the operation. *A. Cases of total hysterectomy with removal of appendages.* 8. Sudden menopause occurred in all. *B. Partial hysterectomy and appendectomy* (one tube and one or both ovaries left in place), 2. In one case a tumor found in the region of the appendix a month after operation, accompanied by pain, tympanites, vomiting, and fever. It disappeared in twenty days, to reappear four months later to a less marked extent. In the second case the patient had an attack very similar to the one described, with symptoms of the menstrual molimen. This occurred twice the following year. *C. Hystero-salpingectomy with preservation of one or both ovaries.* In 6 cases with large pedicles provided with mucous membrane there were traces of scanty menstruation or attempts at menstruation. In 7 cases complete amenorrhea and symptoms of men-

strual molimen. In 2 cases epistaxis, hematuria, or entorrhagia at long intervals. The local conditions observable in 25 cases were the following: (a) Puriform or purulent leucorrhœa until elimination of the ligature of the pedicle was complete. (b) In 4 cases the elimination of the silk ligature was preceded by fever up to 103.2° or 104° . (c) The elimination of the silk ligatures occurred from three months to four years after the operation. The author from the results obtained in these cases formulates the following conclusions: Zweifel's process is rapid, safe as to hemorrhages, favorable *quoad vitam*. In some cases where the ovaries were preserved, menstruation, or at least traces of it, continued. On the other hand, fever occurred in two-thirds of the cases. The operation predisposes to infection of the pedicle. There is elimination of the ligatures, preceded by a puriform or purulent discharge. The value of Zweifel's process is therefore merely relative, and is indicated in cases where rapidity of action is a chief desideratum. In cases where conservative operations are not possible, the preservation of the ovaries and of a large pedicle with a mucous membrane makes the patient feel as if the integrity of the genital apparatus had been preserved and minimizes the feeling of having been mutilated.

Conservative Surgery in Cases of Uterine Fibroids.—P. G. Spinelli¹ says that in the last decade the tendency has been to entirely remove the uterus in cases of fibroid. Modern gynecology ought not to be content with processes so destructive, but should endeavor to bring about a cure by operations of resection and partial ablation, so successfully performed in cases of tumor in other organs, such as the ovaries and tubes. The author reports 4 cases in which conservative operations were entirely successful. He resected a considerable portion of the uterus and completely removed the tumor. The dangers of a conservative operation are secondary hemorrhage and infection of the wound. As to the first, careful suturing of the tissues suffices to avert it. As to the second, it is greatly to be dreaded if there be any purulent endometritis, so much so that the existence of such an inflammatory condition should be a contraindication to the operation. Intra-uterine vaporization might perhaps render the intervention possible. The conservative operation is indicated in young women and in cases where the situation and form of the fibroma permit of its removal with the preservation of a good portion of the uterus and its mucosa.

Plastic Operations on the Cervix.—M. Doléris,¹³ whose article in *La Gynécologie* is reviewed, firmly believes in the value of plastic operations on the cervix. Schröder's operation he considers far better than Emmet's. Trachelorrhaphy establishes a conical cervix which is unfavorable to conception, and by the preservation of sclerotic tissue resistant to dilatation creates a difficulty in parturition. From an obstetrical point of view it has been objected to cervical operations: 1. That they interfere with conception. 2. That they cause

abortion or premature labor. 3. That they cause dystocia by rigidity of the cervical tissue. These objections do not apply to Schröder's operation. This does not prevent conception; in fact, many patients who had been sterile for years became pregnant after the operation. Only high amputation of the cervix can produce abortion; most of the women who have undergone Schröder's operation carry their pregnancies on to term. The abrasion of the cervical mucous membrane cannot be an obstacle to labor, as proved by many clinical data. Those who have attacked amputation have not sufficiently borne in mind these two points: 1. The lesions for the cure of which the cervix is amputated are in themselves able to occasion the accidents. 2. The operation gives good results and is innocuous as regards the future only when it is well and carefully performed. As regards the technique, the following general rules should be followed: 1. Antisepsis of the cervix with prolonged dilatation. 2. Complete abrasion of all sclerotic tissue. 3. Accurate juxtaposition. 4. Absorbable sutures (catgut). 5. Post-operative permanent asepsis. Except in the case of a few predisposed individuals, the formation of sclerotic tissue does not occur unless the abrasion of the sclerocystic tissues has been incomplete, unless one or several sutures have been left in the tissues, or in case of infection. Out of 78 cases of patients, operated upon by himself, who subsequently went through labor, M. Doléris found no case of dystocia. The ideal condition would be the prevention of any necessity for operation on the cervix. Since 1889 M. Doléris, whenever necessary, repairs a lacerated cervix about three days after labor. At this period the vaginal portion of the cervix is sufficiently restored and the tissues sufficiently resistant to permit the freshened surfaces to be easily brought together and kept in place by sutures.

Amputation of the Cervix for Chronic Metritis.—Pétroff¹⁴ has operated upon 81 cases presenting symptoms of chronic metritis, by amputation of the cervix. As a result menstruation became regular, less profuse and less frequent, and sensations of pain and weight in the pelvis disappeared. From his personal experience Pétroff concludes that amputation of the cervix does not prevent pregnancy, but diminishes the chance of conception; that in the first half of pregnancy abortion is as frequent as with deep lacerations; that false pains occur during the last month of pregnancy, and that gestation rarely continues to full term.

Disinfection of the Hands.—R. Labusquière² gives a résumé of Quérin's article on the subject in the *Semaine médicale*, March, 1899, reporting various experiments made with a view of determining the best methods of rendering the hands aseptic. The conclusions are as follows: 1. A combination of mechanical and chemical disinfection is far superior to simple mechanical disinfection (soap and water and brush). 2. These experiments do not permit of a definite judgment as to the comparative value of mercurial ethylene diamine and

a solution of bichloride. The result of disinfection depends largely upon several variable circumstances and the previous preparation of the skin. Moreover, in the experiments upon animals with bichloride solutions it has not been possible to overcome one circumstance most unfavorable to observation—the toxicity of the solution. 3. The tetragenous micrococcus is not a persistent form; its vital resistance is inferior to that of the spore of splenic blood, and therefore its use as the infective agent to the skin in experimentation does not give decisive results. 4. The results obtained with a chlorine mixture were unsatisfactory, this strong disinfectant apparently losing its powers when in contact with organic substances. Mercurial solutions, on the other hand, never *entirely* lose their disinfectant powers. The conclusion of the whole matter appears to be that up to the present time absolute sterilization of the hands does not seem to be possible. But experiments are still being made, and results may alter this condition. The utility of rubber gloves is not to be denied. Varnier says: "Brushing the hands in hot soap and water for five minutes does not secure asepsis; consecutive immersion in alcohol and in a 5 : 100 carbolic solution, a 1 : 1000 bichloride, a 1 : 2000 biniodide does not sterilize the hands; *but*, practice has shown that although a few microbes can still be found after such treatment, *this sterilization of the hands is sufficient from the point of view of prophylaxis*. The germs may not be destroyed, but their activity is impaired." Delbet claims that disinfection was absolute after his hands had been infected by the staphylococcus albus, the staphylococcus aureus, and the streptococcus of Eberth. The conditions were the following: The use of *very hot water* (which dissolves the fats and favors their emulsion). The use of a large amount of soap to a small proportion of water, which further removes fatty matters and is to be continued for five minutes. Next, scouring with a brush and alcohol at 90°, continued until the skin perfectly absorbs the antiseptic solution. Van Swieten's liquor; this occurs when the solution no longer forms in drops.

Intestinal Tumors.—V. Trettenero¹ reports three cases, one of *fibroleiomyoma* in a woman of 39. Dysmenorrhea and dyspareunia brought her to the hospital, and a diagnosis was made of a tumor of the right appendages. Upon operating, however, it was found to be situated in the mesentery, attached to the small intestines, and displaced into the cul-de-sac of Douglas. This displacement is easily explained by the well-known distensibility of the mesentery, the seat of the tumor, and its weight. Adhesions formed later and bound it down. That there was a connection of cause and effect between the presence of the tumor and the dysmenorrhea and dyspareunia was shown by the fact that the patient, several years after the operation, reported that these disturbances had entirely disappeared. Sterility, however, continued. The dysmenorrhea was undoubtedly due to indirect mechanical pressure in the blood vessels and nerves and to peritoneal

adhesions between the tumor and the uterus and appendages. The second case was one of *adenocarcinoma of the cecum spreading to the ileum and ascending colon*, in a woman of 26 years. The symptoms were dysmenorrhea and leucorrhœa, and a large tumor was found in the cul de-sac of Douglas. Operation was begun through the vagina, but, the neoplasm being found to be carcinomatous and the intestines invaded, it was changed to a laparotomy and the tumor removed. The patient died of shock. The third case was one of *adenocarcinoma of the sigmoid flexure and upper third of the rectum*, with peritonitis in the right iliac fossa. There was a history of recent abortion. The case was extremely difficult to diagnose, and exploratory laparotomy was decided upon. The above-mentioned conditions were found, but, in view of the extent and situation of the neoplasm, the idea of an operation was abandoned. The author holds that the most frequent causes of errors of diagnosis in these and similar cases are due: 1. To the absence of any special characteristic subjective or objective symptomatology of these intestinal tumors. 2. To the ease with which they are displaced and the laws of gravity determining their change of situation. 3. To the inflammatory processes and adhesions which they occasion in the folds of the peritoneum and to the sacculated inflammatory exudates formed. 4. To the changes in the circulation and functioning powers of the pelvic organs, due to the presence of the tumors or their adhesions.

Multilocular Ovarian Cyst.—Rouffart^o records the removal of a multilocular ovarian cyst weighing fifty kilogrammes. Recovery.

Ovarian Fibroma.—C. Jacobs^o attributes to a general fibroid change of the genital organs the occurrence of a fibroma of the ovary which he has recently removed. In 5 cases which he had previously reported this was the sole lesion, but in the present instance there were also fibromata of the uterus and an intraligamentous fibroma attached to the supravaginal portions of the cervix by a long pedicle.

Pseudomyxomata of the Ovary.—Under the denomination of pseudomyxomata, Lauwers^o relates the histories of 4 cases of thin and friable walled tumors of the ovary with gelatinous contents which after rupture of the wall fill the abdominal cavity and irritate the peritoneum, to which masses of the material adhere and tend to cause recurrence. First case, 40 years old, good general condition. In July, 1894, a large tumor of the right ovary, contents thick and gelatinous, wall bluish, thin, and friable, was removed, breaking during the operation. The extruded contents were sponged up. Convalescence normal. In October a large tumor had appeared, occupying the hypogastrium and right side. Laparotomy showed remnants of a thin, bluish wall and a large, viscous mass occupying the entire lower part of the abdominal cavity and adherent to visceral and parietal peritoneum. This was incompletely removed and Mikulicz packing inserted. Five

months later, in excising the distended cicatrix, the abdominal cavity was found normal. No recurrence. Second case, 24 years old, ovarian tumor for three years, with rapid increase during last three months, loss of weight, anemia, and afternoon fever. Tumor similar to Case 1. and containing also blood clots removed unruptured. Three months later enormous recurrence, entirely filling the abdomen and generally adherent, with ascites. Cachexia contraindicated removal. Death ten days later. Third case, 71 years of age, menopause at 54, had passed considerable blood from the vagina for three months. Large ovarian cyst similar to the above extirpated in July, 1899. Small colloidal masses adherent to peritoneum left bleeding surfaces when removed. No recurrence. Fourth case, similar tumor, ruptured during removal. Convalescence normal. Too recent to warrant conclusions as to recurrence.

Hematometra in a Rudimentary Uterine Horn.—A patient of O. A. Boije,¹⁸ 27 years old, married, the mother of three children, had always been well except during menstruation. This began at 14, was regular, six or seven days' duration, always accompanied by pain, most severe at the close of menstruation, and accompanied by a spasmodic sensation in the right inguinal region. This pain had constantly increased. Examination showed a uterus apparently normal in every respect except that there was attached by a slender pedicle to its right horn a compact, tender, oval, movable tumor the size of a hen's egg. Laparotomy showed a rudimentary right horn from which arose the right tube and round ligament. After removal and incision this horn was found distended with thick blood, there being no communication with the normal uterine horn as the pedicle was solid. The wall of the right horn was $1\frac{1}{2}$ centimetres thick. Its inner surface was lined by a mucous membrane resembling that of the uterus and microscopically showing interstitial glandular endometritis. Its surface was covered with ciliated epithelium, the cilia in motion. The author advises that in such cases, and also in cases of hematometra in one horn of a bicornate uterus, only the affected horn should be removed.

Hydrosalpinx with Torsion of the Pedicle.—To 4 such cases previously reported by him Hartmann¹⁹ adds a fifth. Three weeks before operation there had been symptoms of pelvic peritonitis, which subsided, but pain returned at intervals. Laparotomy revealed a right hydrosalpinx adherent upon all sides and with twisted pedicle. The ovary was not involved, but the uterus had undergone a half-turn. The adherent appendix was removed. Bacteriological examination of the contents of the tube was negative. Torsion is said to occur in the direction of the hands of a watch on the right side, and inversely on the left, by the external end of the tube falling backward. This is true in 8 of 10 published cases.

Conservative Operations upon the Ovaries and Tubes.—After a detailed discussion of the subject and the publication

of a number of observations, E. Montana¹⁶ concludes a monograph upon these operations as follows: They are not serious from an operative standpoint, and cure completely in 70 per cent of the cases, while menstruation persists in 97 per cent and fecundity in 10 per cent. In 93 per cent post-operative disturbances such as follow castration are avoided. If recurrence takes place, a second operation is not more dangerous than without the conservative attempt. On account of this preservation of functions with the possibility of subsequent pregnancy, the writer advocates conservative rather than radical operations upon young women. Conservative operations are indicated in cases of adhesion of the appendages, chronic edematous ovaritis, sclero-cystic ovaritis, follicular cysts, cysts of the corpora lutea, hematmata, parovarian cysts, and benign neoplasms of the ovary; in catarrhal salpingitis, hydrosalpinx, hematosalpinx, and exceptionally in pyosalpinx. They are contraindicated in cases of neoplasms which are malignant or questionably so (papillomatous cysts), sclerosis of the ovary, suppurative ovaritis, cystic disease of the ovary, and tuberculosis; when the uterus is much diseased; in women near the menopause or who have had many pregnancies; and in hysterical, neurasthenic, and neuro-arthritic persons in whom all surgical intervention is contraindicated. Partial operations upon the tubes—salpingostomy, resection, anastomosis of tube and ovary—are justifiable as they are not severe, cure in 87 per cent of the cases, and may permit pregnancy which occurs in 4 per cent. If the tube is much diseased and the ovary healthy, the latter should be saved in order to preserve its functions. Similarly the ovaries should be retained, if possible, on account of their internal secretion, when the uterus requires removal.

Movable Kidney.—Accepting the classification of Glénard, who palpated each kidney with the hand of the opposite side, the thumb just below the free border of the ribs and the fingers pressing upon the lumbar region, Voituriez¹⁷ divides movable kidney into four degrees: first degree, when, upon deep inspiration, the lower extremity of the kidney is just felt; second degree, when the entire kidney can be felt between the thumb and fingers; third degree, when the thumb and index finger can be approximated above the kidney—this he distinguishes as movable kidney of other writers; fourth degree, or floating kidney, he describes as being palpable by a hand applied to the anterior abdominal wall. The symptoms are pain of sudden onset, severe, localized, and radiating, or general, more often of gradual onset, dull, dragging, sickening, increased by standing or walking; digestive disorders, gastric and intestinal; neurasthenic symptoms; symptoms of renal strangulation resembling appendicitis or perforation of a gastric ulcer, and symptoms of intermittent hydronephrosis. The diagnosis depends upon palpation of the movable tumor, which can be returned to its place in the lumbar region—an impossibility in the case of tumors of the mesentery and ovarian cysts with long pedicles. Tumors of the liver and gall bladder are

more superficial, also move upon respiration, but are not crossed anteriorly by tympanitic intestine. Treatment is medical, orthopedic, and surgical. Medical treatment includes alkaline waters, laxatives, hydrotherapy. Orthopedic treatment aims at replacement of the organ by dorsal decubitus or elevation of the hips, and support by an elastic belt reaching from the symphysis to about two fingers' breadth above the iliac crests and firmly laced while in the recumbent position. Surgical relief by nephrorrhaphy may be required. This should include fixation by silk of the kidney itself to the periosteum of the lowest ribs, and of the fatty capsule to the muscles, etc., also by silk. Lack of success is due to failure to combine these steps or to the coincident prolapse of other viscera.

Dissecting Phlegmonous Perivaginitis.—Von Lingen¹⁸ records the following rare and interesting case: The patient, 39 years of age, married, a laundress, had never borne children. Menstruation was irregular; after a delay of two months there was a profuse flow for two and one-half months, then less abundant. There were pains in the back and epigastrium, and for eight days fever. The leucorrheal discharge had never had a bad odor; no douches had been employed. General condition good. The cervix and upper two-thirds of the vagina were gangrenous, with a distinct line of demarcation below; there was a fetid discharge containing streptococci and staphylococci. Other portions of the genital tract were normal. Vaginal douches and tampons were employed. No change of temperature occurred. Three days after admission the gangrenous outer portion of the cervix and the vaginal walls was discharged, leaving a raw surface which granulated and became covered with fresh epithelium within two weeks. The patient was then lost sight of. Microscopic examination of the slough showed a homogeneous, structureless mass containing connective tissue and vessels filled with thrombi. Von Lingen calls attention to the fact that in such cases as the above the cervix and upper portion of the vagina are affected together. He holds that the lesion is usually due to an obstruction in the vessels which furnish their common blood supply; in some cases it is due to the direct action of a caustic upon the mucous membranes. He states that infectious diseases, which are often known to precede this affection, may cause circulatory disturbances, with thrombosis or embolism of the branches of the uterine artery. At times a local inflammation may cause thrombosis of the vessels supplying a much larger portion of the vagina and cervix. In the author's case some unknown febrile condition preceded the perivaginitis.

Parovarian Cyst.—E. Jeanbrau and J. Moitessier¹⁸ furnish the clinical history and pathological report of a remarkable case of parovarian cyst which contained twenty-three litres of fluid. The latter, contrary to the usual condition, held in solution 4.58 grains of albumin and globulin per litre. The tumor had given no symptoms except abdominal distension,

which had been noticed for nine years, as it had risen out of the pelvis while developing, thus avoiding pressure upon structures in that region.

Congenital Hydrometrocolpos from Imperforation of Hymen.—Under this title Junior Vitrac⁷ describes the following case: The child at birth possessed a dry skin, edema of the left lower extremity and of the vulva and perineum, which protruded markedly between the thighs. For two days the child cried, refused the breast, and had several stools, yet the abdomen became distended and tense. On the fourth day the abdominal distension increased, and an elastic tumor was found reaching three fingers' breadth above the umbilicus. No urine had been passed; 450 cubic centimetres were removed by catheterization at intervals. The abdomen had then become smaller, the perineum and vulva less bulging. There was still apparently a firm edema of the genitals and recto-vaginal wall, but no cause could be found. The vaginal orifice was closed by what appeared to be the posterior vaginal wall. The edema gradually diminished, but catheterization was required for some days. A tumor varying after catheterization was then felt three fingers' breadth above the symphysis, and another reaching to above the umbilicus and situated behind the bladder. The urine became purulent after repeated catheterization; broncho-pneumonia followed, and death occurred thirty-three days after birth. The autopsy showed general peritonitis following rupture of the pelvis of the left kidney, which contained pus. The kidneys and ureters were dilated, except where the latter were compressed by the tumor, which they crossed. The tumor consisted of the vagina, the lower extremity closed apparently by an imperforate hymen, distended with 195 cubic centimetres of mucus. The cervix and body of the uterus were also distended to a less degree; the tubes were normal.

Gonorrheal Endometritis.—In discussing the treatment of gonorrheal endometritis Jacobs⁸ calls attention to the necessity of preventing recurrence by treatment of the husband who caused the infection, and by attacking the gonococcus in all places where it has obtained a foothold and whence it may subsequently extend. For anterior urethritis and the ducts of the glands of Bartholin he employs the needle of the thermo- or galvano-cautery, removing the glands if induration persists. The glands in the cervix are cauterized or Schröder's or Emmet's operation performed. For six weeks he irrigates the uterus daily with chloride of zinc at first, later with silver nitrate and carbolic acid. Curettage should always be followed by such douches until the next menstruation, and is preferably done eight days after a menstrual period. He believes that failure after curettage is due to overlooking the treatment of other infected points or lack of care after the operation.

An Error in Diagnosis.—Alessandro Regnoli¹ reports the case of a woman of 32 years who, several months after an abortion, began to suffer from violent colics, apparently of

renal origin, which started in the renal region, spreading downward to the inguinal region, frequently occasioning collapse and vomiting as in the case of incarcerated floating kidney. There was a tumor which increased in size and was painful to pressure. During the attacks the symptoms subsided when the tumor was reached by the finger in the cul-de-sac of Douglas and pushed upward. A diagnosis was made of floating kidney with probable complications of tumor or lithiasis. The urine showed no sign of altered composition, nor trace of blood, pus, or renal cells, but it was supposed that the left kidney was healthy and sufficed for purposes of elimination. Nephrotomy and nephropexy were decided on. Operation was begun, and to the author's surprise the right kidney was found to be in its place, immovable, and normal as to size and shape. But a large cystic tumor was found arising from the right side of the uterus and the right broad ligament. It was extracted through the lumbar incision. Recovery was prompt and complete. The new growth was a dermoid cyst as large as a fetal head.

Retrodeviation of the Uterus and its Treatment.—M. Richelot¹³ says that while all agree that not every case of posterior displacement is to be corrected, there are some retro-deviations which form a true morbid entity. These retroversions are simple, movable, and found in nervous, arthritic patients; they occasion more or less marked symptoms, which in many cases disappear when the malposition is corrected. The methods so far employed for the treatment of retroversions are all faulty. As far as operation is concerned, there are two ways of getting at the uterus; the vaginal and the suprapubic. Richelot gives a third classification: 1. The open method, with incision of the peritoneum from above or below, exploration of the pelvic cavity, and decisive diagnosis with treatment of adhesions or other lesions discovered, leaving nothing to chance. 2. The blind method, including the processes which have been grouped under the name of Alexander and which claim to rectify malposition of the uterus without seeing or touching the uterus or the organs near it. To the first belong the two methods of hysteropexy. Abdominal hysteropexy is efficacious, but it may cause adhesions, may immobilize the uterus and leave it in too high a position. Vaginal hysteropexy leaves the uterus in the pelvis, but it is a more difficult operation than the other and its obstetrical results are much worse. 3. Shortening of the round ligaments by parietal inclusion. A median laparotomy is performed; the ligaments are grasped at some distance from the horns of the uterus and bent down to the lower angle of the parietal wound, where they are fixed by several catgut stitches. The needle must go through the whole musculo-aponeurotic layer. This operation is both easy and benign. It possesses the advantage of allowing a complete and correct diagnosis and treatment of any lesions found in the pelvis. It occasions no troubles in future pregnancies and labor.

Carcinoma of the Uterus complicating Fibromata.—E. Verstraete¹⁹ concludes from study of the relationship of carcinoma to fibroma of the uterus that their association is not accidental. Cases of fibroma and carcinoma of the body of the uterus he explains as due to transformation of glandular endometritis, caused by the presence of the fibroma, into adenoma and carcinoma. He considers the same theory applicable to cases of fibroma of the body of the uterus with epithelioma of the cervix, but he also admits the causative action of continued irritation from the fibroid, displacements of the uterus leading to changes in circulation and irritating discharges. Diagnosis is easy in cases of epithelioma of the cervix with fibroma of the body. In carcinoma of the uterine mucosa in a fibromyomatous uterus it is suggested by the discovery of the fibroid with a discharge which may be serous, mucous, or purulent, often of disagreeable odor; violent hemorrhages and attacks of severe expulsive uterine pain, especially toward the fifteenth year. Early and complete abdominal hysterectomy is indicated; vaginal hysterectomy is rarely advisable.

V. Pauchet²¹ describes one of several cases of carcinoma developing in fibromata of the uterus which he has observed. He advises early abdominal hysterectomy. Friability of the tumor tissue renders the vaginal operation difficult, and morcellation inoculates the operative wound.

REFERENCES.

¹ Atti della Soc. ital. di Ost. e Gin., vol. vi., 1900. ² Ann. de Gyn. et d'Obst., June. ³ La Clinique, Mont., June. ⁴ Tipografia Forense Commerciale, Naples, 1900. ⁵ Ann. di Ost. e Gin., March. ⁶ Ann. di Ost. e Gin., March and April. ⁷ Jour. de Méd. de Paris, p. 159. ⁸ Rev. mens. de Gyn., Obst. et Ped. de Bordeaux, Feb. ⁹ Bull. de la Soc. Belge de Gyn. et d'Obst., t. x., No. 10. ¹⁰ Le Nord méd., Feb. 15. ¹¹ Rev. mens. de Gyn., Obst. et Ped. de Bordeaux, May. ¹² Ann. de Gyn. et d'Obst., Mar. ¹³ Rev. mens. de Gyn., Obst. et Ped. de Bordeaux, May. ¹⁴ Jour. d'Obst. et de Gyn., Nov., 1899. ¹⁵ Finnsk. Läk. Handl., Feb. ¹⁶ Librairie J. B. Baillière et Fils, Paris. ¹⁷ Jour. des Sci. méd. de Lille, Feb. 17. ¹⁸ Ann. de Gyn. et d'Obst., Feb. ¹⁹ Jour. des Sci. méd. de Lille, Mar. 3. ²⁰ Comptes Rendus de la Soc. d'Obst., de Gyn. et de Ped., May. ²¹ Soc. méd. de Picardie, Feb.

DISEASES OF CHILDREN.

Antitoxin.—Louis Cobbett¹ says that when we remember the deplorable amount of diphtheria in Paris and Berlin before 1895 and contrast it with the present condition of these cities, we cannot but feel that if the causes which have brought about those magnificent improvements were equally applied in England and Scotland, results in the cities there would be vastly better than they are. The prophylactic use of antitoxin, he thinks, might be more largely adopted in the case of children known to have been exposed to the infection. The recent additions to our knowledge of diphtheria may be summed up thus: 1. The disease is due to a specific bacillus. 2. The bacillus may remain in a dangerous state for a very long time in

the mouths of those who have recovered, so that no convalescent can be declared free from infection within three weeks or any other specified period, but only after the disappearance of the specific micro-organism has been ascertained. 3. The disease itself may be so mild as to pass merely for a slight cold or sore throat, and may not keep a man from his work or a child from school. Fatal diphtheria may spread from such mild cases. 4. The bacillus may be harbored by those who, having come in contact with the sick, nevertheless remain quite well. 5. The disease is spread by mouth-to-mouth infection. The author suggests the following practical recommendations, in the hope of stimulating municipal authorities to consider what steps can reasonably be taken to stamp out diphtheria: 1. Medical practitioners should be urged to have all persons with suspicious sore throats, and all those who have come into intimate contact with the sick from this disease, examined by the bacterial test; and all those persons in whom the diphtheria bacillus is found should be isolated until the absence of this micro-organism has been ascertained. 2. All persons recovering from diphtheria, however mild the attack has been, should be isolated until the specific micro-organism has disappeared from their throats. If this is impracticable, adult convalescents should be warned that they are liable to communicate the disease to children, and children should not be allowed to go to school until a satisfactory negative test has been obtained. 3. Whenever diphtheria has broken out in a school or other institution, all the inmates should be submitted to the bacterial test, and those in whom the bacillus is found should be isolated until it has disappeared. 4. Every effort should be made in schools to prevent mouth-to-mouth infection (the author specially dwells upon the danger of the habit of exchanging chewing-gum, said to be prevalent in American schools). 5. A competent bacteriologist should be appointed in every large town to make the necessary examinations. The public needs to be instructed by the medical profession as to recent advances in our knowledge of disease, so that they may be more ready to co-operate in measures for its destruction.

R. W. Marsden ' reports several cases in which antitoxin was given and the diphtheritic process checked, to reappear again a few weeks later; thus demonstrating the fact that immunity after an attack of diphtheria may have quite ceased to exist at the expiration of three weeks, when that attack has been terminated by the injection of antitoxin. In each instance the second attack was practically a recapitulation of the first, *i.e.*, was of an exactly similar type. In one case the prominent feature was chronic enlargement of the tonsils, and no one will doubt the statement that this condition is a very decided predisposing cause to the contraction of diphtheria. In the other three cases the primary seat of the infection was almost certainly either laryngeal or intrapulmonary (using this term in a general way to denote the respiratory

tract below the larynx), and one cannot help concluding that either the type of attack is generally peculiar to a certain individual—*i.e.*, that the same seat of infection will probably be found affected in attacks in the same individual—or that the primary seat of infection predisposes that part for some time subsequently to a reinfection. One question suggests itself, *viz.*, is the period of immunity proportionate to the dose of antitoxin administered? The author believes that a consideration of the different doses administered warrants the conclusion that the connection cannot be a very close one. For his own guidance he has decided that during convalescence from an attack of diphtheria the reinjection of antitoxin must be immediately performed upon the supervention of “croupiness” or signs of early laryngeal stridor.

Antitoxin and Intubation, with a Report of One Hundred Operations.—Burt Russell Shurly² gives the following conclusions and rules of procedure which apply to all cases of laryngeal diphtheria: 1. Administer antitoxin early without waiting for a bacteriologic diagnosis. 2. Tonsillar exudate attended by a croupy cough or partial aphonia is an indication for a full dose of 1,500 to 2,000 units of antitoxin. 3. Antitoxin administered twelve hours or more prior to operative interference will reduce the mortality of intubated cases at least 50 per cent. 4. Immunize all exposed children of croup age. 5. Continuous steam inhalations are of great value in all cases. 6. Early operation is most strongly advocated.

Summary of One Hundred Cases.—Number of operations, 100; recoveries, 69; deaths, 31. Mortality under three years, 49 per cent; mortality over three years, 9 per cent; complicating measles, 8 cases, 5 deaths. Age of patients operated on: One to two years, 16, of whom 9 recovered, 56.25 per cent. Two to three years, 23, with 11 recoveries, 47 per cent. Three to four years, 20, of whom 16 recovered, 80 per cent. Four to five years, 15, of whom 12 recovered, 80 per cent. Five to six years, 11 cases, with 10 recoveries, 90.9 per cent. Six to eight years, 10, of whom 7 recovered, 70 per cent. Eight to twelve years, 5, of whom 4 recovered, 80 per cent. Number of doses of antitoxin, 160. Eighty-five per cent of the cases occurred on streets that were not paved.

Congenital Word-Blindness.—James Hinshelwood³ reports four cases of word-blindness, the children being almost unable to learn to read. In one case the boy had been four and a half years at school and had not yet acquired the visual memory of all the letters of the alphabet. His auditory memory was excellent and he could spell many words correctly. Pictures he could recognize at once, and figures he could remember fairly well. In the three other cases there was no difficulty in recognizing figures. The author believes in the complete functional independence of the visual memories of letters, words, and numbers—*i.e.*, that these memories are registered in different areas of the cerebral cortex. The visual memories of words and letters are registered in the angular

and supramarginal gyri on the left side of the brain in right-handed people. If there be any abnormality within this area, due either to disease, to injury at birth, or to defective development, it is easily conceivable how such an individual should experience great difficulty in learning to read. The author believes that more cases of this trouble exist than is usually suspected, and that many children are treated as imbeciles or incorrigibles for a defect for which they are in no wise responsible.

Electrolytic Dilatation of the Eustachian Tubes in Chronic Tubal Catarrh and Chronic Catarrhal Otitis Media.—Arthur B. Duel⁶ reports several cases and presents the following conclusions for consideration: 1. The pathological process in inflammatory conditions of the Eustachian tube and the tympanum is the same—*i.e.*, hyperemia, followed by the exudation of round cells, which organize into new connective tissue and subsequently atrophy. 2. The names “chronic tubal catarrh” and “chronic catarrhal otitis media,” then, should suggest only a difference in position of the inflammation and not in its character. 3. Where the affection is confined to the tube the impairment of hearing is functional, and is restored as soon as the normal patency of the tube is effected. This is true also of tinnitus and vertigo. 4. Tubal obstruction is present early in a very large percentage of all cases of chronic hypertrophic catarrhal otitis media, and in such instances is one of the chief contributing causes to the further advancement of the disease within the tympanum. 5. It is our duty, then, wherever there is a stenosis of the Eustachian tube, to remove the obstruction as rapidly as possible. 6. In every instance where the obstruction is due to an organized exudate the best method for its removal is electrolysis, for the following reasons: (*a*) It is more rapid. In several instances one application of the electrolytic bougie has been sufficient to cause the reabsorption of the deposit, and in the majority of cases only a few applications have been necessary to secure a patent tube. (*b*) It is more efficient. The disappearance of the exudate results from electrolytic action and not by mere pressure, as in other methods of dilating strictures, and consequently requires less force. There is, therefore, less danger of traumatism. The electrolytic bougie has been easily passed through strictures which were so firmly organized that it was impossible to pass a cotton bougie. (*c*) The results are more permanent. A stricture once removed by this method is permanently removed. The primary cause, acting again; may bring about its reappearance, but by careful attention to proper treatment a large percentage of the tubes may be kept patent. 7. The removal of obstructions in the Eustachian tube is only a large factor in, and not the whole treatment of, chronic tubal catarrh and chronic catarrhal otitis media. 8. The prognosis in any given case depends largely upon the amount of injury to tympanic structure. Where inflation is followed by marked temporary relief of

deafness, subjective sounds, or vertigo, one may expect brilliant results from the establishment of the patency of tubes. Where no temporary improvement follows inflation much may be accomplished, although the results are by no means so certain. The narrow tube should be opened, nevertheless, in every instance, with the hope of checking the advance of the disease.

Grave Diseases in Young Children often due to Latent and Unsuspected Inflammation of the Middle Ear.—Charles H. Burnett⁶ says that it has long been known that of all middle ears examined in infants dead from any asserted cause, normal ones are a rarity, a large proportion being found to be the seat of suppuration, unsuspected and unrevealed until the autopsy. But that the latent ear disease had caused the fatal general malady in most instances had not been suspected until Ponfick, of Breslau, in 1897 had his suspicions aroused that in his own children there existed a causal relation between suppuration of the middle ear and severe gastro-enteritis. Upon curing the suppuration of the middle ear his children rapidly recovered from gastro-enteritis without other treatment. Making a further study of the matter, he found that in 100 children who had been supposed to die of heart disease, burns, acute and chronic infectious diseases, etc., there were 168 diseased tympana. In Ponfick's opinion these children had died of disease originating in what may be termed a symptomless chronic aural suppuration. There had been no pain in the ear, no discharge, nor any external ear symptom. Simmonds gives still more alarming symptoms. In 133 autopsies in nursing infants the middle ear was free from exudations in only 5 cases. Barth draws attention to the fact that recent records show that of 600 children examined before and after death, 80 per cent were found to have a lesion of the middle ear. Simmonds maintains that the bacillus pyocyaneus, benign in adults, is often virulent in children. As this bacillus is often found about the ear and flourishes at the ordinary temperature of the living room, its presence may account for the virulence of an otitis media in young children. Systemic infection is more easily brought about from the young child's ear than from the adult's, because the middle and internal ears are just as large and developed in the new-born child as in the adult, but these parts are not at first surrounded by dense osseous tissue. Pomeroy holds that there is otitis media in all grave diseases in young children, and he asserts that it therefore becomes the duty of every practitioner in attendance upon a sick infant or young child to make an examination of the membrana tympani as much a part of his routine examination as inspection of the tongue. Inspection of the membrana tympani is not an easy thing to learn. In sick children paracentesis of the membrane is often the only means of saving life. It is the young child without discharge from its inflamed middle ear that is in danger of its life, and not the child with an otorrhea: for in

the latter the presence of disease of the ear is at least recognized, and the ear will get well promptly if not secondarily infected from without.

Suppurative Otitis Media in Young Children.—George L. Richards¹³ gives the following outline of the local treatment adopted by him in cases of suppurative otitis. If the suppuration have lasted some time and the discharge be very foul and caries of the tympanic structures already marked, he syringes the ear thoroughly with warm sterile water or with a solution of 1:5000 bichloride of mercury until all débris has been removed. The canal is then carefully dried and the ear inspected. If there is much destruction of the tympanic membrane he applies peroxide of hydrogen on a cotton pledget (never dropped in) as long as there is any exudation of gas, and, after again drying the parts, applies on a cotton pledget a saturated solution of boracic acid in from 40 to 90 per cent of alcohol, the percentage of the alcohol depending upon the age of the child and the ability to bear the pain of the alcohol. In young children he seldom uses over 50 per cent. He next dusts the whole surface *lightly* with powdered boracic acid, or boric acid and acetanilid, or acetanilid, aristol, or euophen combined with stearate of zinc. Lastly, he lightly plugs the ear with a small, narrow wick of iodoform or other antiseptic gauze, taking care that the gauze reaches to the bottom of the canal. In more acute processes he simply cleanses as thoroughly as possible through an opening in the drum membrane large enough to insure drainage, with the insertion of gauze wicking or cotton pledgets frequently changed. The mother is carefully instructed in the structure of the ear and the necessity for drainage, and shown how to change the drainage. A tooth-pick or knitting needle with edges roughened has a piece of cotton loosely but firmly wound around it and projecting a quarter to half an inch beyond the needle tip. The mother is then shown how to draw the cartilage of the ear backward, and how to insert the cotton, which she is to do when the wick is soaked through, wiping out the canal until no moisture comes, and putting in a little powder and a cotton pledget, the procedure to be done from one to three times a day. The child is to be brought to the physician in from three to seven days. No home syringing is allowed in this method.

The Stacke Operation in Chronic Otorrhea.—Edward Bradford Dench¹⁴ says that the original Stacke operation has practically been abandoned, and the term is now used to designate the Stacke-Schwartz procedure—that is, an operation by which the mastoid cells, the external auditory meatus, and the middle ear are thrown into one large cavity. This operation is undertaken for the relief of a chronic aural discharge of long standing, with caries not only of the tympanum but of the mastoid cells as well. That the procedure may be rendered efficient, it is necessary to line the entire bony cavity thus formed by integument; in other words, to secure a perfect epidermatization of the mucous membrane of the mid-

dle ear and mastoid. The efficiency of the operation cannot be questioned in cases where suppuration of the middle ear has existed for a long time, and where the inflammatory process has been so extensive as to render the complete removal of the products of inflammation through the external auditory meatus impossible. The author describes the technique of the operation. In 17 cases which he has operated upon by this measure, 13 have been entirely cured and 4 have been improved. Much has been written of the danger of injuring the facial nerve in performing this operation. While this accident may sometimes occur, the author thinks it extremely unlikely to happen if the surgeon conducts the operation carefully and watches for any sign of irritation of the facial nerve during its progress.

Hysteria in Children.—Ruggiero Lambranzi⁷ says that Charles Lepois was perhaps the first writer to call attention to the hysterical neuroses of children, but in modern times only has a clinical study been made of these affections. Sex and age do not appear to have any predisposing influence, neither do city surroundings influence the frequency of the attacks. Heredity is the chief etiological factor, but other important predisposing causes are defective training, a weak physical constitution, and infective diseases. Occasional causes deserving mention are emotional disturbances, psychical contagion, imitation, traumatism, etc. The symptoms, as in adults, consist of convulsions, paralyses, tremors, sensory, visceral, and trophic disturbances, tic, rhythmical chorea, mutism, aphonia, esophageal and laryngeal spasm, etc. Astasia-abasia, rare in the adult, is in children the most frequent of the paralyses and contractures. Diagnosis is extremely difficult, because the complex of symptoms may in every respect simulate some organic form of disease, or an organic disease may simulate or accompany an hysterical manifestation. The prognosis appears to be more favorable than in the adult. The author reports two cases, one of hysterical forcible closure of the hand in a boy of 9 years, and one of blepharospasm and ptosis.

Opium in Infancy.—T. D. Crothers⁸ calls attention to the injurious effects on the adult organism of opium taken in early life. Opium and its alkaloids seem to have two distinct effects on the nerve centres and organism of infancy. Its sedative action is in the nature of palsy. Cell functions and growths are slowed up, retarded, and finally changed. The changes following long-continued doses become permanent. The symptoms of dulness and stupor continue in lessened vigor and degrees of imbecility and mental perversion in later life. The freedom from pain, and forced sleep with apparent steadiness of nerve force, react in increased irritation and instability, with greater sensitiveness to all surroundings. Nearly all persons who have been injured in infancy and early childhood by these drugs manifest these two characteristics. Increased dulness and stupor, or nervous irritation and instability,

often both, may be combined in one. Beyond these are disorders of the nervous system and digestion, with low power of control, and subject to morbid impulses that are largely uncontrollable. Opium and its alkaloids, given to healthy children occasionally for some special purpose, are in all probability without injurious effects. In unhealthy, neurotic children, with defective ancestors and evident imperfect development, the increased degeneration which follows the use of opium is clearly from this source. Where this drug is combined with other remedies and given a long time the effects are the same. They cannot be lessened by the action of other drugs. No form of opium should be given to infants or children for more than a day at a time. While the effects of continuous sedation may be overcome by correct living, the cell injury and perversion of function is never repaired. The growth and development of other organs may do much to overcome in part and cover up the injury, but the defects will appear from the presence of the slightest exciting cause. The presence of nervous dyspepsia, which begins soon after puberty and early in middle manhood becomes a most distressing disease, is often traceable to the free use of opium in infancy and early life. Early and profound exhaustion from slight overwork or excitement, seen in young persons, indicating low vitality and feeble nervous organism, is the result of opium-taking early in life. Early precocity, or failure to sustain the expectations created, has been noted in the cases of early addiction. The many constitutional defects and degeneracies which appear after puberty and in early manhood should always create an inquiry concerning the early therapeutics and drugs given in childhood. The ignorant mother who uses soothing syrups freely to suppress the irritation of the infant is not the only offender. The routine and often thoughtless physician who uses opium freely in infantile prescriptions is responsible in many ways for the wrecks of later life.

Physical Training in School and at Home.—Henry S. Pettit,⁸ in the course of some remarks on this subject, states that one of the greatest obstacles that a physical director has to meet in his desire to develop the physical side of a child's nature is the parent. The parents are ignorant of the kind of work done in a gymnasium, and, not understanding the benefits derived from exercise, refuse often to allow their children to attend. Exercise can be performed at home with much benefit. It must, however, be made systematic and progressive, and must be adapted to each particular child. In prescribing exercise, give such exercise that every muscle in the body will receive a due proportion of work, giving especial attention to the weak parts or organs. A weak heart can be treated better in this way than perhaps in any other.

Post-nasal Adenoids.—A. S. Cobbledick⁹ gives the statistics of cases seen in the Golden Square Hospital, London, the main points to be deduced from the figures being the following:

That the disease is most common between the ages of 6 and 16 years—*i.e.*, it is more a disease of childhood than of infancy or adult life. It is not a common disease in infancy. It is not until after the age of 16 that the number of females affected exceeds the males. The disease is much more common after puberty than is usually supposed. The disease is a rare one after the age of 30, but the possibility of its occurrence is indisputable. As to the diagnosis, many cases can be recognized on inspection, but the amount and character of the growth are not always so readily determined. Generally speaking, if the faucial tonsils and cervical glands are enlarged, if there is bilateral nasal discharge and suppurative otitis media present, a large amount of growth may be diagnosed. When the tonsils and cervical glands are large, and the only complaint is that the child snores at night and is at times a little deaf, the naso-pharynx is probably not packed, but adenoids are certain to be present in some amount. In children under the age of 15 years, nearly every case of suppurative otitis media is or has been associated with adenoid growths. Digital examination is the best method of discovering the amount and distribution of adenoids: but weakly, nervous children object to it, and the author never examines digitally, except under an anesthetic, previous to operation. The only conditions from which post-nasal adenoids have to be distinguished are congenital syphilis with snuffles, foreign body in the nose, membranous rhinitis, and nasal diphtheria. As to treatment, non-operative methods are useless, and operative measures should be undertaken early. Anesthetics ought to be used. Under 6 years of age the author uses chloroform or the A. C. E. mixture, and over 6 years nitrous oxide gas is often used, although he prefers reserving its use for cases over 15 years. As a rule children do not take gas as well as adults, the tendency being to develop cyanosis and opisthotonos. The writer describes the various instruments used and the method of performing the operation. Personally he finds that almost the whole of the growth can be removed by a few strokes of the curette, and if any growth then remains he finishes by picking away pieces with the forceps until the naso-pharynx is quite clear. After the removal of adenoids no local treatment is necessary; syringing the nose should be avoided on account of the liability to set up acute suppurative otitis media. Earache is a not uncommon complaint about forty-eight hours after the operation: it is not severe, and is due to a Eustachian catarrh spreading to the tympanum; it subsides spontaneously or after a short course of politizerization. After removal of the growth children should be systematically trained to breathe through the nose: for it is only natural that after years of mouth-breathing they should continue to breathe in the same way. Regularly administered nutritious food should be given, and an abundance of fresh air and exercise is necessary. In children the operation is occasionally followed within thirty-six hours by an attack of broncho-pneumonia.

Progressive Pernicious Anemia, Case of, in Childhood.—Theodor¹⁰ studied the case of a boy 11 years old, whose father had cardiac disease; the boy had a good personal history, but had always had a very small appetite, especially for meats. An attack of catarrhal conjunctivitis was followed by an increasing pallor and anorexia, which, with general weakness, grew steadily worse until walking was impossible and a waxy color was present. Eggs of *trichocephalus dispar* were found in his stools, but a thorough cleansing of the bowels had absolutely no effect upon the progress of the disease. Fowler's solution was given, but was stopped because no good results followed. The temperature ranged from 38° to 40° C. There were no cardiac murmurs. Toward the end there was edema of the hands, feet, and lungs, with transudation into the peritoneal cavity and scrotum. Profuse and frequent hemorrhages from the gums occurred, and also petechiæ in many places. An autopsy was not allowed. Very severe diarrhea with bloody shreds in the stools was present the day before death. Twitchings of the facial muscles had been noticed quite early in the disease. Dried blood films showed a marked absence of hemoglobin in the red cells, schistocytosis, and many makrocytes. The leucocytes were to the red cells as 1 to 200. Small and large lymphocytes predominated; eosinophiles were very few. The blood platelets were much increased; and there were many megaloblasts, which decreased as the disease progressed. At the time of death the erythroblasts numbered 10 per cent of all red cells present. The literature is also reviewed.

Relapses of Diphtheria.—Carlo Comba¹¹ discusses relapses of diphtheria and considers the etiological factors. There must, in the first place, be a loss of the immunity acquired in the previous infection. Escherich and Klemensiewicz demonstrated that the blood serum of persons who had suffered from diphtheria possessed the power of attenuating and even of neutralizing the diphtheritic toxin, this power being due to special substances whose nature is as yet unknown. This natural or acquired immunity may be weakened or lost through causes not yet understood, or perhaps by the intervention of other infective diseases. We know that measles and scarlatina are not infrequently accompanied or followed by diphtheria, and Rilliet and Barthez have shown that even the relapses of this disease are more apt to follow a preceding infection by measles or scarlet fever. Some local causes also predispose to diphtheritic relapses, such as repeated inflammations of the pharyngeal mucosa, due to the pyogenic microbe, and hypertrophy and anfractuosity of the tonsils. Under these conditions we may suppose that in the lymphatic tissues of the pharynx there is lessened resistance to the infective germs which are lodged in the tonsillar crypts. This is a mere hypothesis, but it seems to be sustained by the clinical fact that persons with an abnormal development of the lymphatic system of the pharynx are most easily affected by pyo-

genous anginas. Possibly this same diminution of resistance to the staphylococcus and the streptococcus may obtain in the case of the diphtheritic and other bacilli.

Ringworm of the Scalp.—W. Allan Jamieson¹ says that in the treatment of this disease the following are the rules to be observed: 1. The hair must not only be cut or shaved off, but the entire scalp must be kept bare of hair, by razor or curved surgical scissors, till the cure is complete. In this there can be no compromise, and the doctor, aided by the microscope, ought alone to be the ultimate judge as to when the hair may be allowed to grow. 2. Again, the scalp must be kept rigorously clean. It must be washed twice daily with a fluid superfatted potash soap and warm water, the soap being poured on a piece of red flannel and moderate friction employed. Such a soap will only keep the surface soft, polished, and adapted for the reception of remedies. The affected areas usually show a pinkish tint, as compared with the healthy, while the diseased hairs do not all grow in the proper direction. The application which the author has found most efficacious is one modified from an old formula of Sir William Jenner. It consists of precipitated sulphur, one drachm; salicylic acid, β -naphthol, and ammoniated mercury, each ten grains; and lanolin, one ounce. For lanolin we may perhaps substitute vasogen, an oxidized vaselin. One point is of great consequence: it is that the ointment be rubbed in for ten minutes slowly and carefully twice a day. In this way the epidermis becomes charged with the antiseptics, the sulphur, mercury, and naphthol, while the salicylic acid favors the moulting of the diseased hairs while increasing the porosity of the skin. Whatever we use, the principle is the same—the steady saturation of the permeable epidermis with substances hostile to the fungus.

Rubeola Epidemic in Graz, Etiological and Symptomatological Data of the Latest.—Tobeitz¹⁰ compared the epidemic of r  theln with that of measles going on at the same time. He found that in general the predisposition to measles is much the greater. Up to the end of the sixth year of life the predisposition to measles is more marked; after that age r  theln is more frequent. A second attack of measles occurred in 0.46 per cent of the cases; a second attack of r  theln in 2.5 per cent. The incubation period of r  theln is no regular one, but varies with individual and external influences. It is noteworthy that the shortest incubation stage occurred in patients over 14 years of age. The symptoms were almost limited to the exanthem and swelling of the cervical and occipital lymph nodes. No complications occurred.

Scarlatina Miliaris.—J. P. Crozer Griffith¹² reports 4 cases which suggest to him the following thoughts: 1. However frequently miliaria may attend severe cases of scarlatina, the oft-expressed view seems untenable that its presence is an indication that the case is severe. In none of these 4 cases was the attack severe, and it was lighter in the two with the great-

est development of vesicles. 2. The same statement applies to the intensity of the scarlatinal eruption and its relation to miliaria. There appears to be no connection between the two. There seem to be different causes acting to produce the efflorescence and the vesiculation, although these causes are undoubtedly frequently associated. 3. Contrary to the opinion of certain writers, there appears to be no necessary relation between the amount of scarlatinal peeling and the degree of miliarial eruption. In one case with numerous vesicles peeling was scarcely discoverable, while in another with an equal development of miliaria peeling was abundant. 4. The view of Thomas is very probably correct, viz., that the development of miliaria in scarlatina depends largely on some peculiarity in the skin of the patients rather than on any special intensity in the scarlatinal rash or other factor. The observations of Henoch upon a family tendency to miliary scarlet fever seem to support this view. 5. It is perfectly possible in occasional cases to have the presence of abundant miliarial eruption cause decided difficulty in diagnosis and even lead into error.

Summer Diarrhea.—F. J. Waldo, in considering the causation and prevention of this disease, says that there is one point of external environment that, at the risk of some repetition, may be again specially mentioned. In the streets of towns there is always a large amount of horse-dung. Even when the roadways are carefully swept a certain amount of this material collects in crevices and corners, whence, under favorable atmospheric conditions, it is widely distributed in the form of dust and may infect human beings either directly through the respiratory tract or indirectly through the contamination of food. Contamination with horse-dung, moreover, would charge the road dust with organic matter that, under suitable conditions of warmth and moisture, would be favorable to the growth of extraneous bacterial life. Even if healthy horse-dung were shown to be free from bacteria pathogenic to man, we have still to learn that the same non-pathogenicity applies to the excrement of horses suffering from diarrhea, before we exclude the possibility of infection from horses. A large proportion of fruit and other foods exposed for sale in the street must be infected by road dust. Dust can also penetrate into larders and houses. Dogs, cats, birds, rats, and mice add largely to the fecal surface contamination. It is a familiar observation that rain diminishes diarrhea, which may be due to washing dust out of the air and from exposed surfaces, as well as by collecting and retaining dust on moist and muddy surfaces. The water-flushing of streets would act in the same way as rain, hence the importance of an impermeable paving, such as asphalt or cement, which can be thoroughly cleansed. The macadam road is more productive of dust and cannot be water-flushed. Another way in which our streets will be rendered purer is by the increase of motor carriages, whereby horses will be replaced. The condition in cities of narrow streets, macadam roadways, and numerous

unpaved and imperfectly cleansed courts, favors the creation and accumulation of dust organically polluted from various sources, human and otherwise. That danger may obviously be increased by a flat gradient and by the presence of a porous and organically polluted soil, also by a lessened average of cleansing wind and rain, and by a higher temperature that may favor bacterial growth. The bad conditions mentioned are those that would be vigorously attacked by an energetic local sanitary administration. Indeed, in some instances careful attention to cleansing of streets and courts in the summer months has resulted in a definite decrease of diarrhea. Where rainfall has been deficient an artificial substitute has been provided in the shape of systematic flushing by hydrant and hose. When the soil has been unfavorable it has been shut out by impervious paving. Streets have been widened to admit freely both sun and air. In addition to such precautions something is wanted in the better protection of food supplies from pollution by organic dust. That may be effected to some extent by the use of sterilized milk and by the official regulation of milkshops, and in a far more universal measure by the more scientific construction and care of household larders. We must look to the better education of the people as to the ever-present necessity of sound sanitation, and especially as regards the cleanliness and ventilation of dwellings and the proper storage of food; for, after all is said and done, no great advance can be made in practical preventive medicine without the co-operation of the intelligent community.

The Study of the Diseases of Children.—Langford Symes¹⁶ fears that Ireland is a little behind other nations in the study of this especial branch of medicine, and urges that more attention be paid to it. It is extremely difficult, inasmuch as the patients are unable to assist in the diagnosis by a description of their symptoms. It does, however, greatly train the powers of observation, which are of lifelong value to their possessor. In addition to this, the medical examination of a sick child requires exceptional dexterity, only acquired by careful practice and training, and our examination must be more cautiously and skilfully conducted than in adults. Moreover, the study is one essentially *over and above the ordinary practice of medicine*. It can be reached only through and beyond a sound knowledge of medicine. It is superadded to medicine. No portion of medicine can be relinquished, but a great deal that is fresh may be acquired. The investigation of disease among children, if properly conducted, will be found to teach the student and practitioner clinical medicine more thoroughly than any other method whatever. The examination of the organs of a young infant is not easy. Mapping out the cardiac dulness, sketching out the liver or spleen, deep examination of the abdomen, careful investigation of the nervous system with its motor, reflex, sensory, atrophic phenomena, and estimating the mental condition,

combine to form one of the severest tests of any practitioner's knowledge. The refinements of skill, the great tact, the opportunities and necessities for observation, the caution required in receiving the statements of friends, and the necessity of discovering for one's self the actual state of the system from facts which are evident to one's own senses, will be of lifelong value to the physician.

Toxins and Antitoxins.—A. C. O'Sullivan¹⁶ discusses two questions: How are antitoxins produced? and How do they act? He believes that the facts bear out the view that the toxin stimulates the cells of the body to produce the antitoxin, and that it is not the blood cells but the tissue cells that do so. When we come to inquire what the particular cells are which produce antitoxin, we are met by greater difficulties. Tetanus affords the most promising field for solving this question, because it is evident that tetanus poison acts directly on the central nervous system. Wasserman has shown that an emulsion of the brain of an animal which is sensitive to tetanus has strong antitetanic properties, while if the animal has been poisoned by tetanus its brain loses this power. Here we have a case of neutralization of antitoxin by toxin, and this, not in the serum, but in the brain cells themselves. Other experiments tend in the same direction, and we may say that in the case of tetanus, at all events, the cells of the brain, which are those attacked by the toxin, are also those which produce the antitoxin. It is easy to see that such a thing is extremely hard to prove or disprove in other diseases where no specific cells are especially attacked, and, of course, the view goes counter to all the work of Metschnikoff and his pupils on the protective action of the wandering cells of the body. As to the second question, How do the antitoxins act? the facts which have been established are the following: 1. The toxin enters into chemical, or molecular, combination with the cell protoplasm, and when in this combination is neutralized—*i.e.*, is innocuous for other cells. 2. The toxin enters into chemical combination with the antitoxin, and when in this combination is neutralized. 3. The antitoxin is produced by the cell, and is thrown off by the cell into the blood. 4. The cells which produce the antitoxin are the same cells as those which combine with the toxin. We are almost forced to the conclusion that the element in the blood which proceeds from the cell and neutralizes the toxin in the blood is the same element which neutralizes the toxin in the cell. And so we arrive at the first part of Ehrlich's hypothesis, "That element or group of atoms in the cell protoplasm which combines with the toxin when it is thrown off by the cell into the blood, is the *antitoxin*." But we have seen that it is the action of the toxin on the cell, and that only, which stimulates the cell to produce the antitoxin—that is to say, when any of the combining groups of the cell molecules are taken up by the toxin, they are replaced by the cell, and replaced in very much increased numbers, as usually happens in all tissue regeneration. Ehrlich

supposes that these combining groups, when they become numerous, lose their hold on the cell molecules and pass over into combination with the molecules of the fluid in which the cell is bathed, and so get into the blood, and that the injection of a given quantity of toxin will stimulate the cells to produce many hundred equivalents of antitoxin. But there is more than this, for toxin does not merely combine with cell protoplasm, it also destroys it. There is plenty of evidence to show that the part of the toxin molecule which poisons is not the same as that which first combines with the cell molecule. The toxins of diphtheria and tetanus, when kept in the liquid state, gradually lose their toxic power down to a certain point, but they do not lose their power of combining with antitoxin. It takes exactly the same quantity of antitoxin to neutralize a given quantity of toxin, no matter how long it has been kept or how weak it may become. In Ehrlich's terms, the haptophore group in the toxin molecule remains unaltered, while the toxophore group is changed. Thus the toxophore group is much less stable, and less rapid in combining, than the other, and hence is probably much more complex. Many facts connected with the infectious diseases receive a ready explanation by means of this hypothesis—*e.g.*, what is a naturally immune animal? A naturally immune animal is one whose protoplasm molecule contains few or none of the groups capable of combining with the toxin in question. Again, the incubation period of a disease, which appears in poisoning by toxins as well as by the living organism, is the time in which it takes the poisoning group to get to work after the toxin has been anchored on the cell molecule by its combining group. Again, it is found that the production of immunity and of antitoxin, although the cause of both is the same, do not at all run parallel to one another in amount. You may have an animal in the early stages of immunization which is hypersensitive to the poison while its blood is full of antitoxin; and, on the other hand, in the later stages animals are often found to be practically completely immune while their blood yields no antitoxin at all.

REFERENCES.

- ¹ Edin. Med. Jour., June. ² Jour. Am. Med. Assoc., May 19. ³ Lancet, May 26. ⁴ Med. Chronicle, May. ⁵ Am. Jour. Med. Sci., April. ⁶ Penn. Med. Jour., May. ⁷ La Riforma Med., May 30 and 31. ⁸ N. Y. Med. Jour., May 19 and 26. ⁹ Clinical Jour., May 16. ¹⁰ Arch. f. Kinderhk., vol. xxviii., Nos. 5 and 6. ¹¹ Riv. crit. di Chir. med., June 2. ¹² Phil. Med. Jour., May 12. ¹³ Med. News, May 19. ¹⁴ Trans. of Am. Otological Soc., 1899. ¹⁵ Dublin Jour. Med. Sci., May 1. ¹⁶ Dublin Jour Med. Sci., June 1,

ITEM.

THE AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS will hold its thirteenth annual meeting in the assembly room of the Galt House, Louisville, Ky., Tuesday, Wednesday, and Thursday, September 18, 19, and 20, 1900, under the presidency of Dr. Rufus Bartlett Hall, of Cincinnati, O. The following-named papers have been offered: 1. President's Address—R. B. Hall, Cincinnati. 2. Ovarian Fibroma; case, with microscopical report—L. H. Laidley, St. Louis. 3. Cholelithiasis, with report of cases—H. E. Hayd, Buffalo. 4. Treatment of Chronic Cystitis in the Female by Curettement of the Bladder and Instillations of Corrosive Sublimate—Charles Greene Cumston, Boston. 5. Diagnosis of Ectopic Pregnancy before Rupture, based on ten cases—J. F. Baldwin, Columbus. 6. Three Cases of Extrauterine Pregnancy, with specimens—W. B. Dorsett, St. Louis. 7. The Private Hospital—Joseph Price, Philadelphia. 8. Paper by E. F. Fish, Milwaukee. 9. Paper by C. C. Frederick, Buffalo. 10. Extirpation of the Rectum and Sigmoid per Vaginam—John B. Murphy, Chicago. 11. Paper by H. O. Pantzer, Indianapolis. 12. Paper by J. H. Carstens, Detroit. 13. The Hymen—of what Significance is its Presence or Absence in Determining Virginity?—John Milton Duff, Pittsburg. 14. Paper by W. P. Manton, Detroit. 15. Paper by F. Blume, Pittsburg. 16. A Satisfactory Method for Suspension of the Uterus—Robert T. Morris, New York. 17. Paper by H. W. Longyear, Detroit. 18. Some Points regarding Surgery of the Gall Bladder—A. Vander Veer, Albany. 19. Surgery of the Liver and Bile Ducts—W. G. Macdonald, Albany. 20. Observations respecting Malignant Disease of Pelvic Organs—Augustus P. Clarke, Cambridge. 21. Paper by M. Rosenwasser, Cleveland. 22. Bilateral Celiotomy and Shortening of the Round Ligaments for Complicated Retroversion of the Uterus—A. Goldspohn, Chicago. 23. Paper by W. B. Chase, New York City. 24. Paper by Charles A. L. Reed, Cincinnati. 25. Round Ligament Ventrosuspension of the Uterus—D. Tod Gilliam, Columbus. 26. Paper by L. S. McMurtry, Louisville.

The titles of papers are announced in the order of their reception. The permanent programme will be classified and issued about August 26, after which date no further titles can be added or changes made in the printed programme. A cordial invitation is extended to the medical profession to attend the several scientific sessions of the Association.

THE AMERICAN JOURNAL OF OBSTETRICS

AND

DISEASES OF WOMEN AND CHILDREN.

VOL. XLII. SEPTEMBER, 1900. No. 3.

ORIGINAL COMMUNICATIONS.

THE EVOLUTION OF MY TECHNIQUE IN THE TREATMENT OF
FIBROID UTERINE TUMORS.¹

BY

HOWARD A. KELLY, M.D.,
Baltimore, Md.

(With ten illustrations in the text and two plates.)

It is but three years since our Fellow, Dr. Charles P. Noble, gave us an admirable historical résumé of the various methods of treating fibroid uterine tumors, in which he traced the evolution of this capital gynecological operation from the earliest accidental or tentative efforts in the fifties down to the perfected technique of his own work in the Kensington Hospital for Women at the time of writing.

It occurred to me, upon reading Dr. Noble's paper, that inasmuch as I have personally been closely connected with the development of this subject since my first publication in THE AMERICAN JOURNAL OF OBSTETRICS in January, 1886, it might prove to be of more than personal interest to trace my

¹ Read before the American Gynecological Society, at Washington, D. C., May 3, 1900.

work in its successive advances up to my present, as I believe perfected, technique. If each Fellow of our Society would also pursue a similar course, I am sure that much valuable and interesting information would then be made available which is destined otherwise to be lost in private records. Believing, therefore, that I am serving a good purpose, and without apology for the closely personal nature of my narrative, I shall proceed.

One of my first operations was an atypical one, performed September 6, 1884, upon a patient who had been the rounds of the Philadelphia hospitals and who had long suffered from severe floodings due to several sessile fibroid tumors occupying the lower segment of the uterus.

I opened the fat abdomen and grasped with forceps and pinched off as much as possible of the sessile tumors down on the pelvic floor by means of a wire *écraseur*. The free hemorrhage which followed this treatment was checked by means of a thorough Paquelin cauterization.

The operation was extremely difficult on account of the excessive fat and the constant bleeding and obtrusion of intestines, which interfered seriously with the work of cauterization.

The wound was closed, with a glass drainage tube left in, through which the pelvis was repeatedly washed out with weak carbolized water, until the tenth day, when the tube was removed.

The patient recovered completely from this operation and from the fibroids, but acquired a large ventral hernia which she still had over ten years later when I last saw her.¹

My next operations were more radical, when I followed in several instances the treatment at that time advocated by Hegar, of Freiburg, consisting in the control of the vascular supply of the stump by means of a rubber mass ligature encircling it with all its vessels. After cutting away the tumor mass, the stump was brought out at the lower end of the abdominal incision and held by transfixion pins, and then treated with a salicylic or a tannic acid mixture, designed to mummify it until it sloughed in two or three weeks below the ligature, leaving a healthy granulating pit which slowly closed up.

This plan of treatment involved far less risk to life than the more "ideal" method which Schröder, of Berlin, was carrying out at the same time, that of sewing up and dropping the stump into the abdominal cavity, treating it like the pedicle

¹ See AMERICAN JOURNAL OF OBSTETRICS, January, 1886.

of an ovarian tumor. To recall the anxieties which dominated our minds during that period I quote the following paragraph from one of my early papers: "The dangers of this plan of Schröder's are to-day just what they were at first: hemorrhage into the peritoneal cavity after the closure of the abdomen, and sepsis from the stump thus dropped within." The hemorrhage was supposed to come from the shrinkage of the uterine tissues, and the sepsis from the cervical canal.

My first important original step in the surgical treatment of fibroid tumors was published in a paper entitled "A New Method of Performing Hysteromyomectomy," an address delivered before the College of Physicians in Philadelphia, January 2, 1889, and printed in April, 1889, in *THE AMERICAN JOURNAL OF OBSTETRICS*, page 375. I there advocated the plan which I had successfully carried out October 10, 1888—

- Of tying off the broad ligaments,
- Of controlling the circulation from the uterine vessels by means of a temporary rubber ligature,
- Of cupping out the stump,
- Of burning out the cervical mucosa,
- Of obliterating the raw cupped surface of the cervical stump by several rows of buried continuous catgut sutures,
- Of using a last row of interrupted sutures to unite the opposed peritoneal surfaces. These were left five inches long, and used to suspend the stump by means of a pair of forceps clamping them and left lying across the closed abdominal wound.

Finally, and most important of all, is the method of controlling hemorrhage from the uterine vessels: "The operator then takes a needle armed with a strong catgut or silk ligature, and passes it with a sweep deeply through the cervix, well below the end of the pedicle, entering it from before backward. This is at once tied very tight, and the left uterine artery thus ligated. This ligature should enter just above or below the constricting rubber tubing, according to the length of the stump. Reversing this movement, the right uterine artery is also tied." The rubber ligature was now cut and the lips of the wound were carefully watched for any oozing. "Should any occur and continue, a second ligature may easily be thrown around the uterine artery and its branches on one or both sides, just above or below the other, passing still more deeply in the uterine tissue, catching all secondary vessels."

After checking the hemorrhage in this way the abdominal wound was closed down to the stump, which was then sewed to the peritoneum on all sides just below its united lips, but above the ligature embracing the uterine arteries.

It is evident that this procedure was a remarkable advance upon any which had preceded it, for, in the first place, it avoided the risks of dropping the stump (which was attended by not less than 20 per cent mortality) by keeping the only portion liable to become infected or liable to give rise to hemorrhage within easy reach, as the stump could be everted at a moment's notice by simple traction on the long ligatures. In the second place, it met the objections to the Hegar operation by doing away with the rubber ligature and so disposing of the sloughing end of the stump.

A plan similar to this was also devised and advocated by Prof. H. Fritsch,¹ then of Breslau.

This method of treating the uterine artery, by ligating it separately at the side of the cervix and avoiding a mass ligature, is precisely that which I have practised ever since that date, and as a public announcement anticipated that of Dr. L. A. Stimson,² whose paper was read January 9, a week later than my own.

By suspending the stump in this way I was able to study the changes which took place from day to day, and to determine whether any notable shrinkage took place, allowing the tissues to bleed, and whether the tissues became infected.

As a matter of fact, in a long series of cases the hemorrhage and the sepsis never occurred, so I was next emboldened to drop the stump within the peritoneal cavity. This important step was first actually taken by my able associate, Dr. Hunter Robb, operating in my clinic during my absence.

This radical change was not made without fear and trembling, as witness the persistent drainage of all these cases with dropped pedicles, at first with glass tubes reaching from the abdominal wound down to the floor of the pelvis, and then with glass with gauze wrapped about it, until at last, January 11, 1891, encouraged by the results of complete closure in other lines of abdominal work, I abandoned the drain altogether.³

¹ See Volkmann's Sammlung klin. Vorträge, No. 339, April 15, 1889.

² See New York Med. Jour., March 9, 1889, and Medical News, July 27, 1889.

³ See Johns Hopkins Hospital Reports, vol. ii., p. 184; Johns Hopkins Hospital Bulletin, vol. ii., p. 93; AMER. JOUR. OF OBSTET., vol. xxxv., pp. 481 and 650; also "Operative Gynecology," vol. ii., p. 29.

My method of operating at this time was by tying off the ovarian vessels, the round ligaments, and then the uterine arteries, gathering each group of vessels up by itself with its surrounding connective tissue, in this way using three main ligatures on each side. I have never in a single instance adopted the procedure of bunching up the broad ligaments and tying them *en masse* or with interlocking sutures.

I have always insisted, contrary to B. F. Baer's declaration, that the ligation of the uterine arteries is not sufficient to control the bleeding from the amputated cervix, and that the cervix ought to be sewed up separately to get rid of the large raw surface, to shut off the communication with the vagina, and to check the hemorrhage from small vessels, which would otherwise often form a hematoma sure to suppurate sooner or later.

The procedure of cutting down on both sides through the broad ligaments until the uterine vessels were exposed and tied and the uterus was amputated, was the method in general use all over America after the abandonment of the serre-neud and the rubber ligature—a method similar in all essential particulars to that called by Richelot's name in France and described by him in 1897.¹

My next step (see Fig. 1) effected a most radical change in my methods, by introducing a simplified plan of operating which is applicable to almost all cases of fibroid uteri and inflammatory affections where the uterus has to be extirpated. This is effected by first ligating and dividing the ovarian vessels of the more accessible side, ligating and dividing the round ligament, then detaching the vesico-uterine peritoneal fold and pushing down the bladder with a firm sponge held in forceps. By doing this and at the same time pulling the uterus up and toward the opposite side, the uterine vessels are beautifully exposed in the cervical region, where they can be ligated *en masse*.

The important step in the new operation now lies in the fact that the uterine vessels of the opposite side are sought out after amputating the cervix. I then clamp these vessels and pull the uterus up and out, clamp the round ligament and last of all the ovarian vessels, when the mass is removed. The ovarian vessels on the far side may be tied, as in Pryor's method, before seeking out the uterine.

Similar in principle, but diverse in its plan and its field of

¹ See Bull. et Mem. de la Soc. de Chir. de Paris, July-August, 1897, p. 474.

operation, is a method which, in December, 1894, Dr. Pryor described under the title, "A New and Rapid Method of Dealing with Intraligamentous Fibromata,"¹ in which he advocates the following procedure for this class of cases: Cutting down on the free side and opening the posterior vaginal cul-de-sac, and ligating the uterine vessels on that side. Then the bladder is dissected free from the uterus.

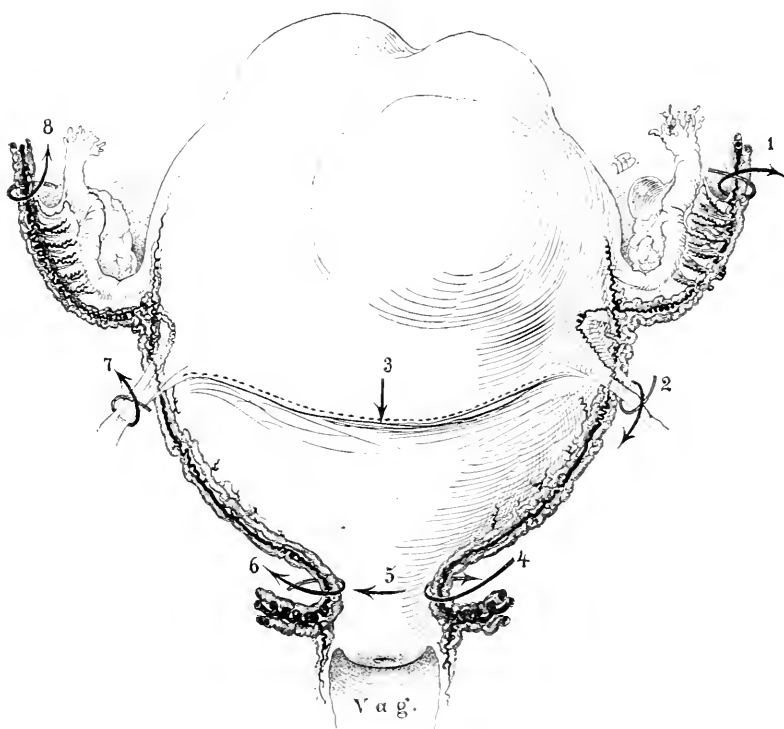


FIG. 1.—Showing the method of enucleation by cutting down on one side and across the cervix and up on the other side, following the arrows and the numbers. Begin on the side presenting the fewest difficulties, reversing, therefore, the order if necessary. The arrow at 3 represents the detachment of the bladder which follows the ligation and division of the round ligament at 2. It is my practice to leave the vaginal end of the cervix; this is easily removed, if desired, or may be incised through into the vaginal vault and opened out into a crescent for drainage.

Then, ligating the ovarian vessels over the intraligamentary growth, the tumor is pulled strongly to that side and the uterine vessels are ligated, using a Deschamps needle and great force if necessary.

¹ Medical News, December 1, 1894, p. 602.

The cervix is now freed from its vaginal connections, the tumor enucleated, and the remainder of the broad ligament divided.

The new method of removing the myomatous uterus by a continuous incision from right to left or *vice versa* has the approval of so distinguished a surgeon as Paul Ségond, who has introduced it into France.¹

I have operated in this way upon 30½ myomatous uteri since 1894 (to May, 1900), with 15 deaths, or a mortality of 4.88 per cent.²

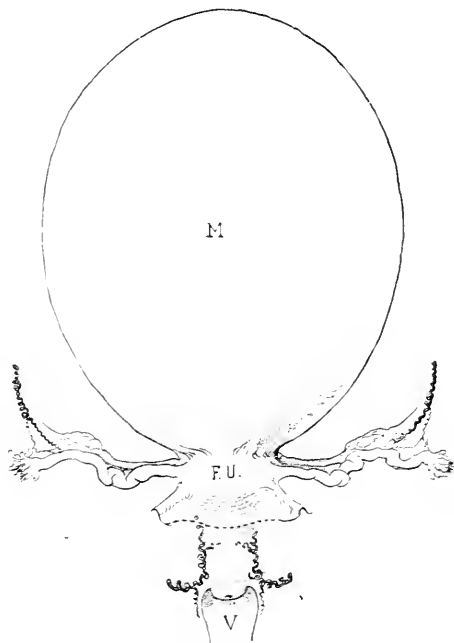


FIG. 2.—The simplest form of a large fibroid tumor, occasioning no distortion of the uterine vessels. Myomectomy, and not hysteromyomectomy, is here the proper plan of treatment.

Such a plan of treatment is applicable to all ordinary cases where the uterine arteries and veins are not extremely displaced either by being elevated and spread out on the surface of the tumor or by being pushed back and to one side where they can only be found with difficulty.

A few diagrams will make this point clear. It will be seen by consulting Figs. 2, 3, 4, and 5, taking for example a tumor reaching about to the umbilicus in each case. In the first the tumor is attached to the top of the uterus (Fig. 2) or to the

¹ See *Revue de Gynécologie et de Chir. abdom*, August, 1897.

² Statistics prepared by Dr. Lindsay Peters.

posterior or anterior fundal surface, and has grown without distorting the uterine body. In this instance a myomectomy could easily be done in a young woman, but where hysteromyomectomy is deemed advisable the method just described is applicable.

In Fig 3 the tumor is represented as growing lower down in the uterine body and more interstitial in its relations; while the cervical segment still remains unchanged, the tubes and ovaries, with the ovarian vessels, have been raised well out of the pelvis, half-way up to the umbilicus. Fig. 4 shows a still

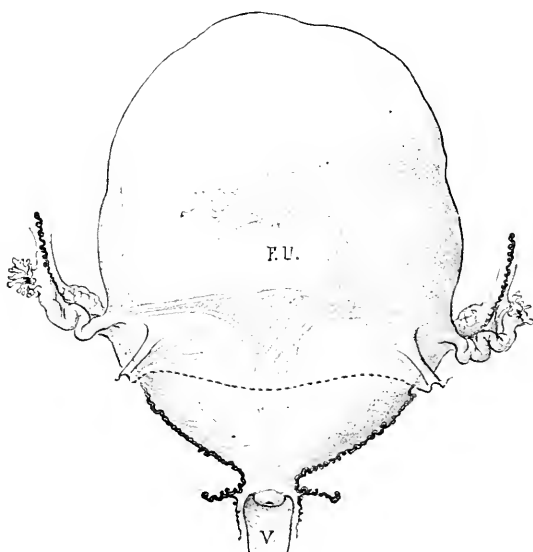


FIG. 3.—A tumor of the same size as that shown in Fig. 2, holding a different relation to the uterine walls, which are spread apart, separating the vessels by a wide interval. The best method of enucleation here would be to follow the plan outlined in Fig. 1—the continuous transverse incision.

further advance in this same direction, with the ovaries and tubes and their vessels in extreme displacement, but with the cervical segment also unchanged. In all these cases the principle of the operation is the same, and the best method of enucleation is to seek out first and isolate and ligate the ovarian vessels on one side, then to expose and tie the uterine vessels of the same side, to cut across the cervix and clamp the opposite uterine vessels, then the round ligament, and, lastly, the ovarian vessels.

When, however, the tumor springs from the cervical seg-

ment (Fig. 5), raising the uterus out of the pelvis on its vertex like a cap, the vascular relations are often so changed as to necessitate the employment of some other plan in the enucleation. The difficulties here are that the uterine vessels, and in extreme cases the ovarian vessels too, course down over the ample convexity of the tumor, flattened out and fan-like, and they cannot be gathered together and tied *en masse* either on the upper convexity or at any point below it.

Let me picture the difficulties one must labor under in attempting an enucleation in such a case by any one of the commonly accepted plans.

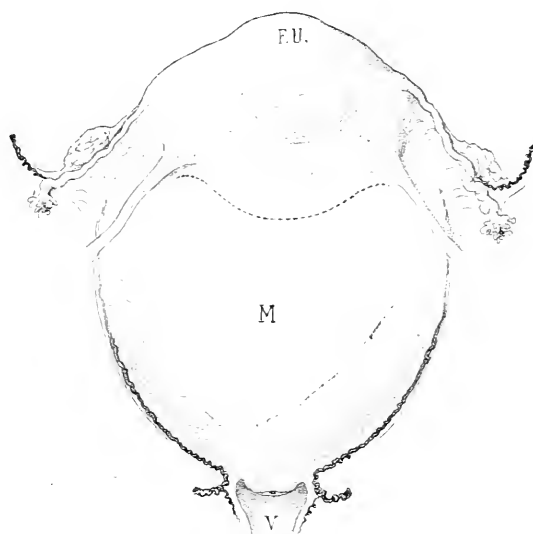


FIG. 4.—Shows the same tumor lower down in the uterus, now not only pushing the vessels apart, but raising them as well high up into the abdomen. Still the relations of the vessels are such that they can easily be isolated and controlled by the method seen in Fig. 1.

In the first place, the effort to get at the ovarian vessels at the pelvic brim fails because the large tumor chokes the pelvis and the vessels are spread out over its lateral or posterior surface and can only be reached singly; it is also impossible to distinguish the large terminal branches of the uterine from the ovarian vessels, as they lie distributed over a wide area near the cornu.

When there exists, however, no other way of beginning the operation but by ligating these vessels, we must start by passing a ligature under the largest accessible trunks one by one. The needle must often be plunged into the substance of the

tumor in order to encircle the vessel, and each time this is done two actively bleeding points are created. Each vessel controlled proximally must also be clamped or tied distally to avoid deluging the field with blood when it is divided. This creates just so many more bleeding areas, and when all the vessels have been secured on both sides considerable time has been lost, and, if the patient is anemic, a serious, often dangerous, amount of blood has been lost. When the vessels are severed they must next be stripped down off from the convexity of the tumor until they are gathered in bunches at the pelvic brim and low down in the pelvis, leaving the tumor bare

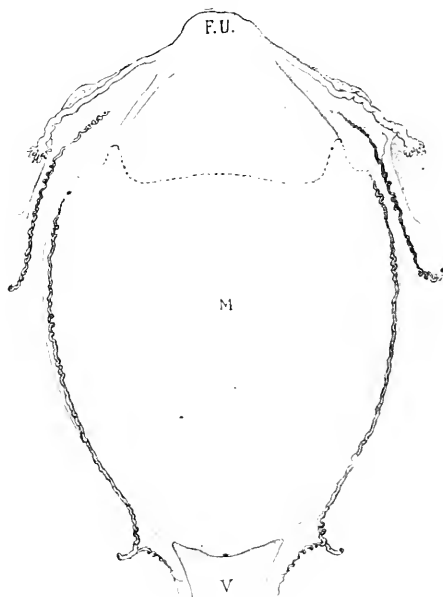


FIG. 5.—Here the tumor is in the lowest uterine segment and the fundus of the uterus is pushed high up to the umbilicus. To add a great mass of fibroid tumors springing from the body of the uterus would complicate the appearance, but would add nothing to the difficulties of the enucleation, which arise from the displacement and the spreading out of the uterine and the ovarian vessels on the surface of the lower tumor. The fan-like distribution of these vessels, so often seen in such cases, is not represented in the figure.

for the enucleation. This step is often accompanied by frightful hemorrhage from numerous vessels entering the capsule of the tumor below the point of ligation, and much more time is lost in controlling these vessels. Indeed, the condition of the patient often becomes so critical that the operator sees no way out of his dilemma but to plunge ahead, risking the enormous hemorrhage, while making a rapid enucleation in the expect-

tation of gaining control of the vessels as soon as he has dis-embarrassed himself of the tumor.

Aside from the cases just referred to, in which the tumors are situated for the most part in the uterine body above the vesico-uterine peritoneal reflexion, and in which the vascular supply can be readily reached by the methods detailed, there is a large group of atypical cases in which serious difficulties are encountered in the effort to reach the vascular trunks, much time is lost, and serious hemorrhage often encountered. In these cases the tumor or tumors spring from the lower part of the uterine body or the cervix, or extend out into one or both broad ligaments.

There are three ways of dealing with these difficult classes of tumors and meeting the complications in an abdominal operation:

1. By a median sagittal bisection of the uterus with the tumors.

2. By a coronal bisection of the uterus in its cervical portion.

3. By a bisection of the tumor alone.

The Median Sagittal Bisection of the Uterus with the Tumors is best applied to cases complicated by extensive inflammatory disease of both adnexa, where the inflamed structures cannot be readily reached behind the tumors and where the tumor masses themselves are anchored to the pelvis by the adhesions. It is easier also to enucleate a multinodular fibroid uterus in this way when the tumors occupy the lower part of the uterine body and are distributed in part subperitoneally. The effect of such an arrangement often is, when the masses are large, to lift up the ovarian vessels on the sides of the tumor and to cover them in so completely above the pelvic brim that they cannot be reached at the beginning of the operation.

Enucleation by Bisection of the Tumor may be applied either in a myomectomy or in a hysteromyomectomy, and is a method best adopted where there is a single large subperitoneal tumor either in front under the vesical peritoneum or to one side in the broad ligament. When applied to a myomectomy (the removal of the tumor alone without the uterus) the mass is best bisected, because it rolls up and out on to the surface, as it is divided, with less injury and less handling of the extensive cellular investment than is necessarily the case where the mass is removed entire. During the bisection the tumor

is rolled up through the incision in its peritoneal covering, being evolved from the depths on to the surface step by step; while if the tumor is enucleated entire from its bed, it is necessary to carry the fingers down around the tumor on all sides, effecting much of the separation in the dark, and finally bringing up the large mass with much greater difficulty than the bisected portions.

When the tumor is in front it may be necessary at most to clamp the vesical vessels when they are much enlarged; when the large tumor lies in the broad ligament, then clamps should be applied to the vessels near the uterine cornu and at the pelvic brim, and to the round ligament in two places; then the tumor is bisected and unfolded, as it were, and removed, after which the divided broad ligament may be reunited. When bisection is applied to single, large, subperitoneal tumors as a preliminary to hysterectomy, it is done in order, by their removal, to collapse the vessels and the tissues which have been displaced and crowded against the pelvic walls. In the collapsed uterus the landmarks are easily found and the uterus is then readily removed.

Enucleation by a Coronal Section of the Uterus, still a different plan of operating, is that found necessary in the case of a fibroid tumor filling the pelvis and reaching as high as the umbilicus and adherent by its upper pole. In a case of this kind, described in a previous publication,¹ the patient, when put on the table, had a rapid, small pulse which speedily ran up to 140.

I opened the abdomen, and, after releasing some omental adhesions, found the large tumor firmly fixed in front of the vertebral column behind the umbilicus by extensive dense adhesions. The colon was so intimately attached to it that it soon became evident, as I tried to detach it, that a continued dissection would necessitate an extensive resection of the bowel. I then resorted to a plan successfully adopted in a

¹ Johns Hopkins Hospital Bulletin, March, 1900, p. 56.

DESCRIPTION OF PLATES.

FIG. 7 shows the densely adherent suppurating myomatous mass. Note the omentum and the transverse colon spread out over the anterior surface. The first step in the operation has been taken by exposing the cervix and grasping it with museau forceps and starting the transverse division.

FIG. 8 shows the continuation of the operation begun in Fig. 7. The divided cervix is pulled up and down and the uterine vessels clamped. The mass is then pulled out until the round ligaments and the ovarian vessels come into view.

In some cases the ovarian vessels can be clamped first, as shown in the figure.

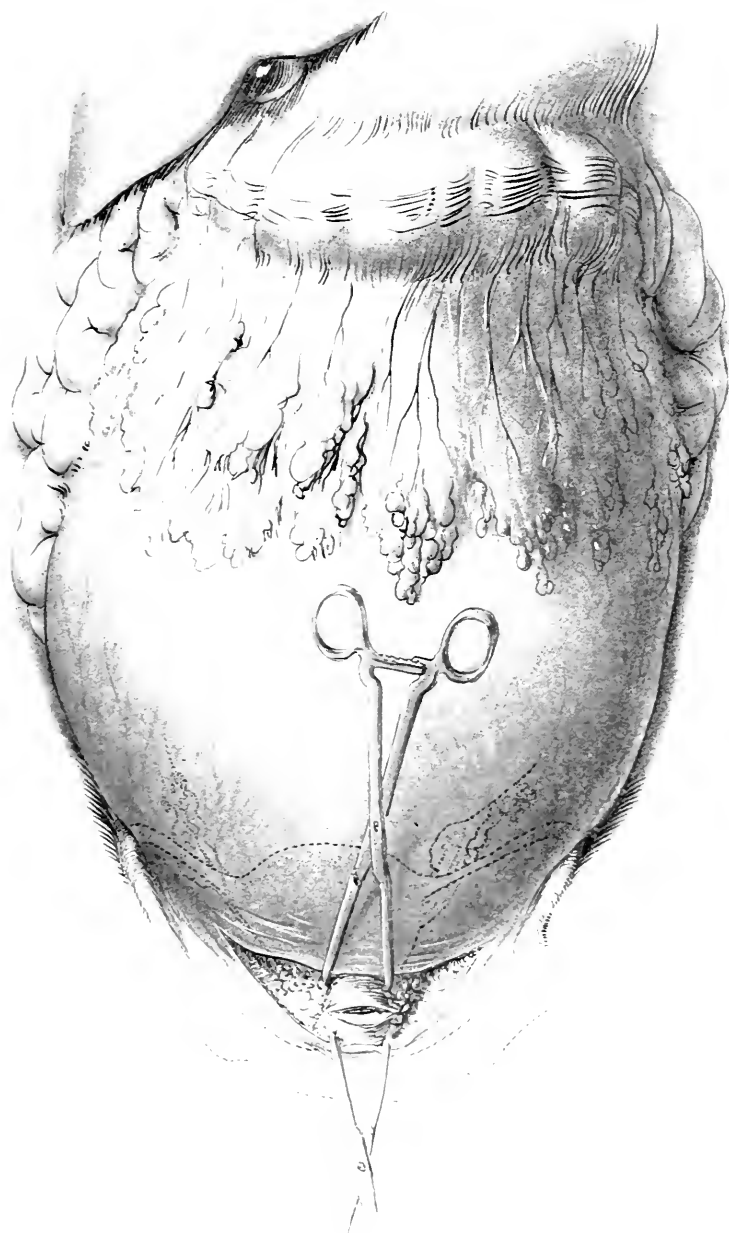


FIG. 7.

FIBROID UTERINE TUMORS--K. H.

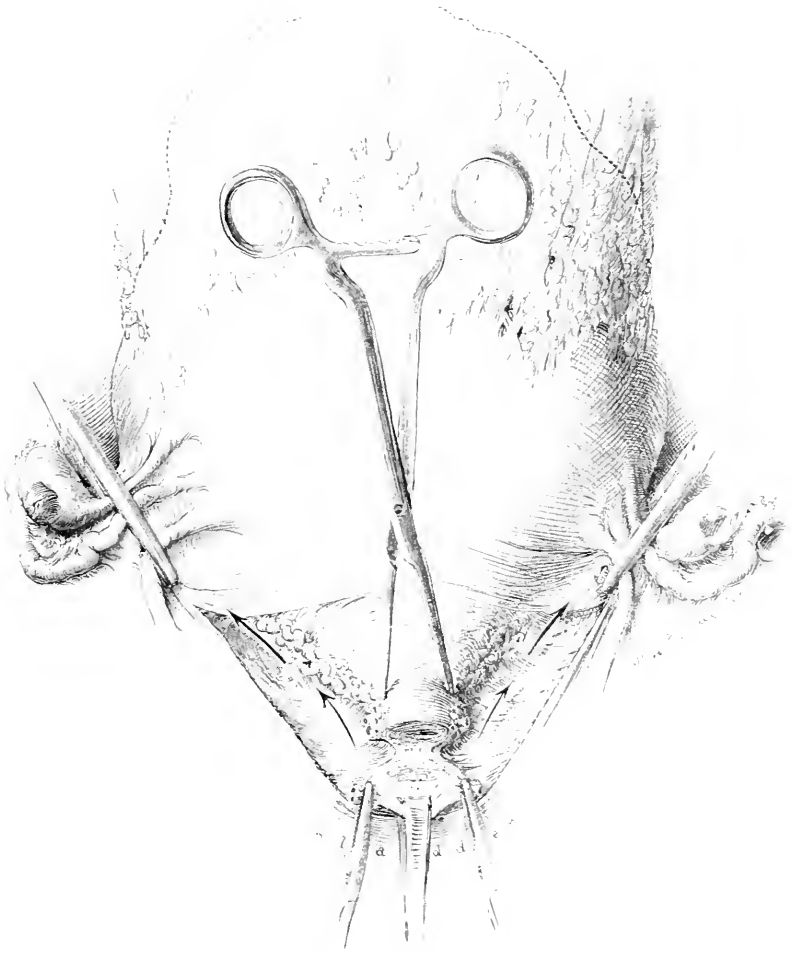


FIG. 8

FIBROID UTERINE TUMORS—*Kell*.

previous case, January 24, 1891,¹ that of leaving a thin layer of the tumor upon the bowel, that is, of sacrificing the tumor for the sake of the bowel. As soon, however, as I cut into

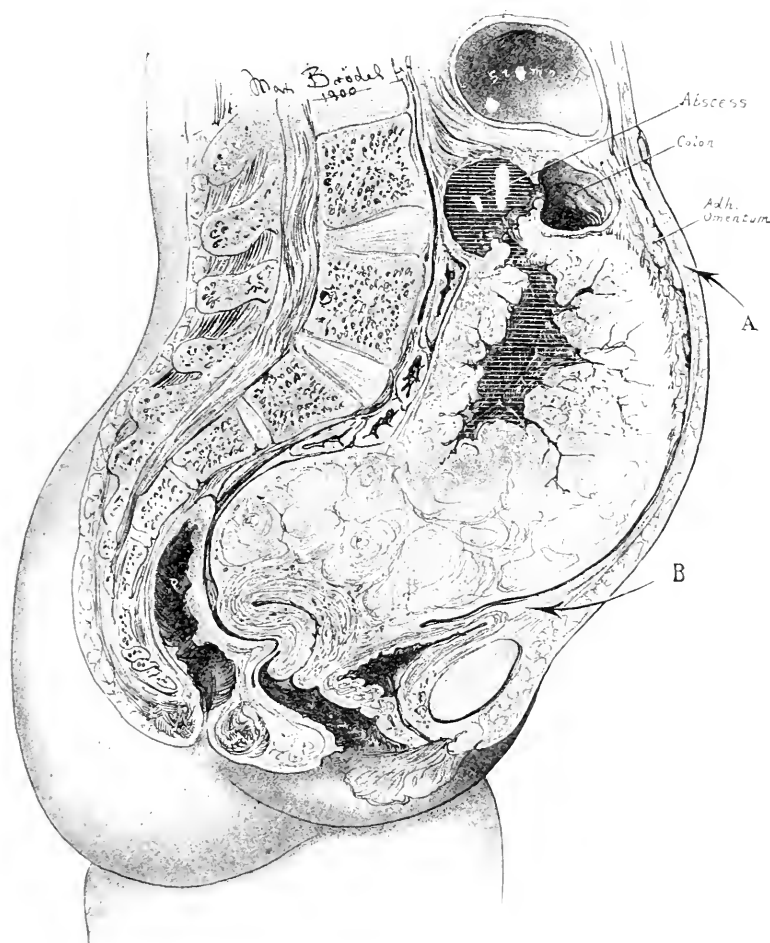


FIG. 6.—Is a sagittal section of the case of a large myomatous mass which had undergone central necrosis and suppuration, and opened through an antevertebral abscess into the transverse colon.

For method of treatment see Figs. 7 and 8.

the tumor it began to bleed so freely that I did not dare to go ahead on account of the already alarming condition of the patient.

¹ See Gyn. Reports, No. 2, p. 582.

I then turned to the lower pelvic pole of the tumor, hoping to be able to free it by tying off the vessels from above downward and amputating the cervix; I found the tumor attached to the whole anterior surface of the uterus above the cervix, pushing the fundus of the uterus down to the pelvic floor completely out of reach. I was able to place two clamps on the tops of the broad ligaments, controlling the ovarian vessels, but this was not a necessary step in following the procedure then adopted, which met the complications in a satisfactory manner.

The cervix, which could be felt behind the symphysis at the vesical reflexion, was caught by stout, short-toothed museum forceps and pulled up within reach; the vesical peritoneum was detached and pulled down, exposing more of the cervix, which was again caught below with a second pair of forceps.

A knife was then plunged through the cervix in an anteroposterior direction between the two pairs of forceps, and the cervix was cautiously divided from side to side (that is to say, coronally or transversely) by pulling the divided cervix apart. The cellular tissue to the left of the cervix was first exposed, and the uterine vessels, not yet seen, clamped with a short, stout forceps; the uterine vessels on the right side were next controlled in the same way.

When these important vascular trunks were thus secured, the upper forceps was forcibly used to drag up the tumor and uterine body, rotating them on a transverse axis, exposing first the round ligaments and then the ovarian vessels of the left and the right sides, respectively; these structures were clamped and the whole mass disconnected from its pelvic attachments. The tumor now only remained adherent by the dense adhesions at its upper pole. The next occurrence was the rupture of an enormous abscess lying behind and extending from the centre of the tumor into a sac bordered posteriorly by the lumbar vertebræ and above by the mesocolon, and discharging through a large opening into the transverse colon. The tumor was now rolled out and enucleated from behind forward without added injury of the bowel other than was rendered necessary by the opening into its lumen. The contaminated abdominal cavity and the abscess cavity, containing at least a litre of thick yellow pus, were cleansed, the opening in the bowel sutured, and the long abdominal wound closed, leaving a large iodoform-gauze drain extending from the umbilicus into the remainder of the sac under the colon.

The patient made an excellent recovery with a small, rapidly closing fistulous track.

This type of operation is, I think, the very best that can be adopted for those cases in which there are dense adhesions to the upper pole of the tumor which cannot be dealt with with-



FIG. 9.—Shows a case in sagittal section to be treated by a median bisection of the tumor or of the tumor and the uterus together. The difficulties lie in the displacement, distortion, and concealment of the uterine and the ovarian vessels, not shown, of course, in this figure.

out great risk by attacking them in a direction from before backward.

An operation similar to this has also been practised by Dr. Otto G. Ramsay and described in the *Johns Hopkins Hospital Bulletin*, April, 1900, page 77.

The first case in which I found it necessary to make a radi-

cal departure from my transverse method of enucleation (see Fig. 9) was one of the group of cervical myomata. In this instance there was no cervix to be felt by the vagina, and on opening the abdomen the bladder was found raised half-way up to the umbilicus by an ovoid tumor choking the pelvis, with its long axis vertical. The body of the uterus, containing a few small nodules, sat high up in the abdomen above the umbilicus

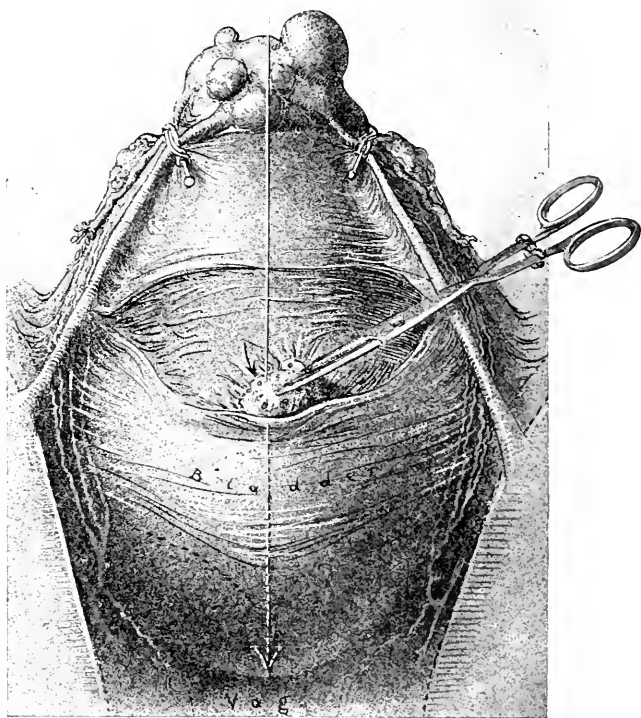


FIG. 10.—Shows several steps in the enucleation of the mass described in the text:

First the long stout pins are driven through the uterus under the round ligaments so as to control the cornual circulation. Next, when necessary, the bladder is dissected off and pushed down; this is not necessary when the tumor lies in the posterior part of the uterus.

The next step is the bisection of the mass, rolling it out in halves, either enucleating the tumor alone or removing tumors and uterus together.

like a cap on top of this tumor, and on the right and on the left sides the displaced uterine and ovarian vessels were spread out in a network. I began the enucleation by trying to tie off these vessels wherever I could catch them on the left side. There was a great deal of hemorrhage from the surface of the

tumor, and as soon as I commenced to detach the ligated vessels and to push them down the hemorrhage increased. It was evident that the patient, who was already feeble and anemic, could not survive the operation if there was to be any considerable additional loss of blood. I then at once resorted to the following plan, which promptly overcame the difficulty and speedily terminated the operation without further loss of blood:

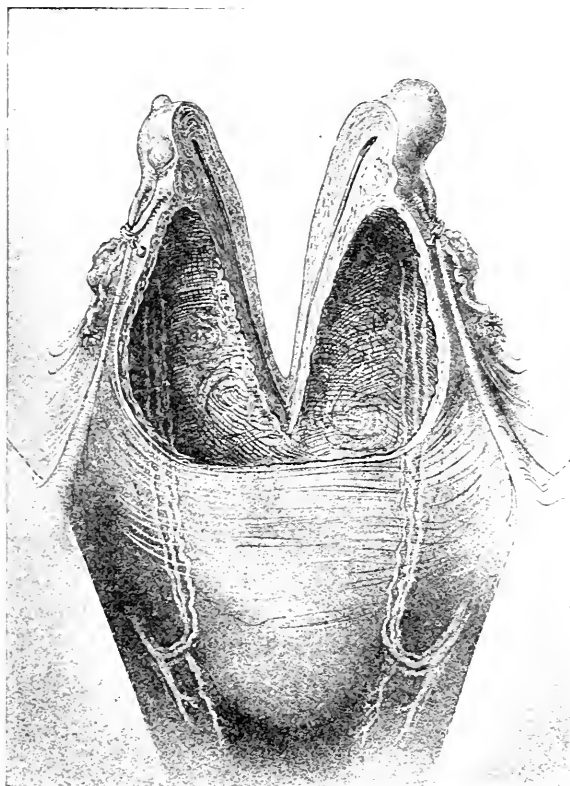


FIG. 11.—Shows the appearance presented by such a mass as that shown in Fig 10 after bisecting the tumor and uterus and rolling the tumor out of its bed. The uterus now collapses and is easily dealt with; it may be enucleated, or it may in suitable cases be stitched together and preserved.

I took two long-jawed pedicle forceps and controlled all the vessels on each side of the uterus on top of the tumor by thrusting one of the open jaws of the forceps through the capsule of the tumor on one side at about the level of the round ligament from the front of the broad ligament until the point appeared on the posterior surface of the tumor behind the

broad ligament; I then clamped the forceps powerfully down on the uterine and ovarian vessels, entirely controlling the circulation. Both sides were treated in this way.

I then took a long-bladed knife, and grasping each uterine cornu with stout, short-toothed museau forceps and pulling in opposite directions, I rapidly bisected the uterus and cut on down into the tumor as far as the vesical peritoneum, which

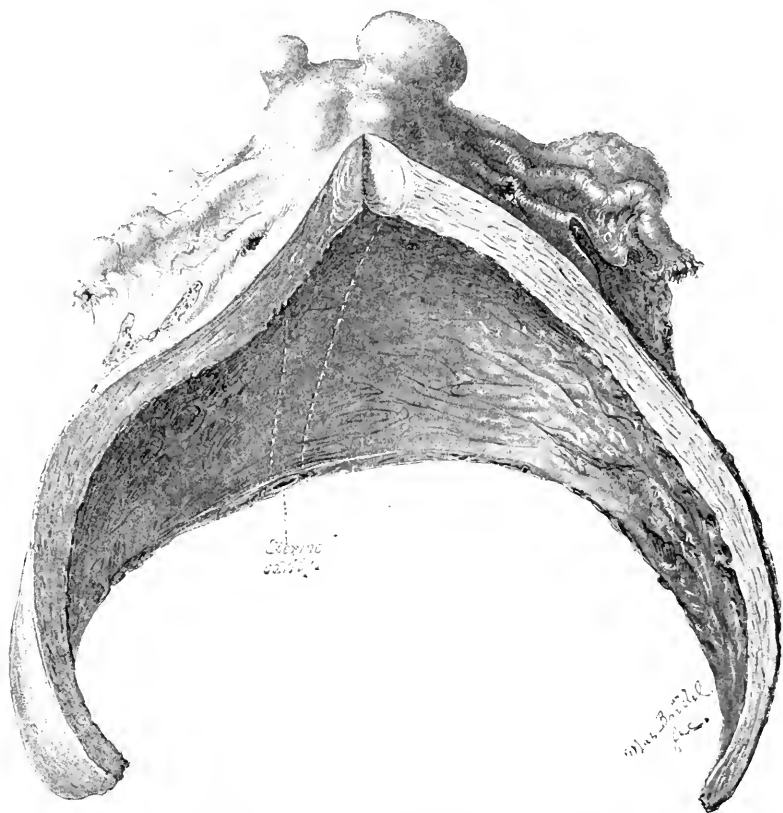


FIG. 12.—Shows a case in which after the removal of the tumor the bisected uterus was then removed (v. Figs. 10 and 11). The uterine body sat like a cap on top of the tumor mass.

was then freed and pushed down, when the tumor was completely bisected.

The next step was the enucleation of the left and the right halves of the tumor. Grasping the left half of the tumor at a convenient point and pulling it away from its attachments with a pair of museau forceps, it was rapidly enucleated from its uterine bed by means of a blunt crenated spatula, which I

always use in the enucleation of myomata. The right half was then enucleated in the same way. All these steps were carried out without a particle of hemorrhage, in remarkable contrast to the alarming beginning of the operation.

With the enucleation of the large cervical tumor the tissues surrounding it collapsed, and the uterine artery was then easily reached and tied at any desired point below the body of the uterus, and all the difficulties of the situation vanished and the case became a simple one. The two halves of the uterus were enucleated separately and the bed of the tumor closed by buried sutures, and the vesical peritoneum drawn over and attached to the posterior peritoneum, concealing the wound, and the operation finished.

The enucleation of the bisected uterine body may be done after the removal of the tumor, or, if the tumor is high up, with the tumor still *in situ*, in one of two ways—either by tying the ovarian vessels, now easily reached, and the round ligaments and lastly the uterine vessels and then amputating, or by severing first one then the other half of the uterus in the cervical portion, cutting from within outward, from the centre of the cervix toward the broad ligament, and so exposing and catching the uterine vessels, after which they are divided and each half is pulled up in turn by its cervical extremity and the round ligaments of the ovarian vessels tied in order. The direction of the enucleation in this case is from below up, the reverse of the direction ordinarily taken; the extirpation in this way is facilitated by the sagittal bisection of the uterus.

The patient made an excellent, uninterrupted recovery, and returned some weeks ago to her home and duties in the country.

I would urge this plan of dealing with all fibroid tumors of large size occupying the lower uterine segment, and elevating the uterine as well as the ovarian vessels, and choking the pelvis; in these cases the vessels cannot be tied in mass, but require numerous separate ligatures, and the operator is constantly embarrassed by hemorrhage if the ordinary plan of working from above downward is pursued.

The methods of enucleation just described are also equally applicable to inflammatory cases in which the uterus, uterine tubes, and the ovaries are to be removed. I have extensively used them in these cases, but will not add to my present thesis by discussing this separate group.

MEMBRANOUS DYSMENORRHEA.*

BY

LYDIA M. DE WITT, M.D., B.S.,

Assistant in Histology in the University of Michigan,
Ann Arbor, Mich.

(With eight illustrations.)

SINCE 1724, when Morgagni¹⁰⁰ first described a case suffering with membranous dysmenorrhea, but especially since 1846, in which year Oldham¹⁰³ and Simpson¹⁰⁸ published more detailed descriptions of the affection, giving it the name which it has since borne, there has been much interest among gynecologists in the disease called by some membranous dysmenorrhea, by others exfoliative endometritis. This interest has been due partly to the comparatively rare occurrence of the disease, partly to its doubtful character, and partly to the stubbornness with which it resists all methods of treatment.

The symptomatology is so characteristic, the disease presents so uniform a clinical picture in all cases, that this phase of the question has given little opportunity for discussion. However, though nearly every case gives a history of expulsive pain, simulating labor pain, beginning usually at or just before the beginning of the menstrual flow, and increasing in severity until the expulsion of the membrane brings relief, yet Löhlein⁸⁸ gives the history of 13 cases, 6 of whom passed the membrane nearly or quite painlessly. Other similar cases are reported by Ramina¹¹⁹ and other writers, giving us the anomaly of membranous dysmenorrhea without dysmenorrhea.

Discussions have arisen and authors have disagreed on the pathology, the etiology, the treatment, and even the character of the affection. On only one point have all agreed. As noted in the "American Text Book of Gynecology," 1898, "the membrane is *the* diagnostic point." In regard to this membrane, Keogh⁷² writes: "More or less complete membranous casts may be expelled. The structure varies. They

* From the Pathological Laboratory of the University of Michigan.

may be the inner layers of the mucous membrane of the uterus, which separate like the decidua of pregnancy. These may be early abortions, and some writers think that all are; but in some cases in which there is an approach to decidual structure, as shown by hypertrophy of stroma cells and alterations in glands, pregnancy can be excluded. These are the so-called menstrual deciduas and indicate that the mucous membrane has undergone changes preparatory to the reception of the ovum, and, not being fructified, has been expelled. Membranous casts may also be composed of a mixture of blood, mucus, and epithelial cells, instead of uterine tissue."

Winter¹⁶² and Amann¹ agree in dividing membranes which may be expelled from the uterus into two great classes—organized and unorganized. To the latter belong the diphtheritic and fibrinous membranes and those composed of coagulated blood and lymph, which, being seen by Aswell, Tyler, Smith, Mandl, Klob, and others of the older writers, deceived them into the belief that in all cases the membrane consisted of fibrin with blood cells, desquamated epithelial cells, etc., and that the mucous membrane of the uterus was not exfoliated in any case. A little later Lébert,⁸⁰ Laboulbène,⁷⁷ Coste,⁸¹ Follin,⁶¹ and others showed, by careful microscopic examination, the presence, in some, at least, of the membranes expelled, of the elements of the mucous membrane of the uterus: and, as a result of their work, Troque¹⁵⁰ in 1869 distinguished two forms of the disease, membranous and pseudo-membranous dysmenorrhea. To the latter form he believed 13 of the 27 cases which he collected from the literature to belong.

Of the organized membranes expelled from the uterus, Amann distinguishes two classes: the decidua menstrualis, or the membrane expelled in membranous dysmenorrhea, and the decidua graviditatis, or the decidua of pregnancy, either intrauterine or extrauterine.

Between the decidua of menstruation and the decidua of pregnancy it is, as can be readily seen, especially important to differentiate. Some of the points of differential diagnosis between the two membranes, as given by Amann and others, may therefore be briefly reviewed here:

1. Macroscopically the membranes appear similar, except that the dysmenorrhic membrane shows usually on its inner surface the openings of the enlarged gland ducts, which are usually obliterated in the membrane of pregnancy except in the very earliest stages. The membrane of pregnancy is not

often triangular, with tubal openings, showing a complete cast of the uterus, as the dysmenorrheic membrane often is.

2. The superficial epithelium is usually regularly cylindrical in the dysmenorrheic membrane, while in the decidua of pregnancy it is either absent or reduced to thin, endothelium-like cells.

3. In the dysmenorrheic membrane the glands show regular cylindrical epithelium, rarely hyperplastic, while the glands are generally ectatic and rarefied. In the membrane of pregnancy the glandular epithelium is flattened, and later the glands are lacking in the compact layer, which alone is expelled.

4. The stroma cells present the most marked differences. While the stroma cells of the decidua menstrualis are often enlarged and the protoplasm increased, the enlargement is not often carried to the degree that they might be confused with true decidual cells, which are ten times the size of the normal cell and fusiform to polygonal in shape. While the true decidual membrane shows almost no intercellular substance, that of membranous dysmenorrhea shows usually a small cell infiltration about the glands and vessels, and the meshes of the tissue are pushed apart by exudate.

5. The blood vessels of the true decidua are greatly widened, the vessel wall consisting simply of endothelium with no muscle coat. In the dysmenorrheic membrane the blood vessels appear as in a mucosa of chronic inflammation.

6. The presence of chorionic villi, with trabeculae of myxomatous tissue, if clearly shown, must make the diagnosis certain.

Auvard⁵ gives differential points similar to those cited above from Amann.

Virchow,¹⁵⁴ because of the resemblance between the two membranes, has named that of membranous dysmenorrhea "decidua menstrualis," and the name has been retained by many later writers.

Coquard,⁵⁹ who has given an excellent review of the literature on this subject and to whom I am indebted for much of the bibliography antecedent to 1887, believes that the membranes can be differentiated by the shape of the membrane and the periodicity and regularity of expulsion, as well as by the histologic differences noted by Amann. Martin⁹¹ and Kürstern^{76a} say that the diagnosis is easily made by the lack of decidual cells. Guzzoni,⁶² while he finds predominating in his

preparations cells which recall decidual cells, thinks them not large enough for true decidual cells. Saviotti,¹²⁷ on the authority of Kölliker and Scanzoni, bases his diagnosis also on the greater size of the true decidual cell, while Wyder asserts that the dysmenorrheic membrane consists of the uterine mucosa with its glands, both altered by endometritis, with interglandular substance consisting of small round cells and fine fibrils in the superficial layer, showing the character of the mucosa in repose, while in the deeper layers are found larger fusiform elements in laminated bundles. Mayer,⁹⁴ Löhlein,⁹⁵ and Vinkel,¹³³ admitting the difference in the size of the cells, add that the cell of the dysmenorrheic membrane is not homogeneous, as are the true decidual cells.

Ramina affirms that in doubtful cases the anamnesis and appearance of the epithelium should decide, while Pozzi¹¹⁹ bases his diagnosis entirely on the presence of chorionic villi.

Schröler¹³⁰ says it is difficult to distinguish an early abortion, as decidual cells can be artificially produced. The presence of chorionic villi is necessary. G. and F. E. Hoggan⁹⁹ also assert that decidual cells may be caused by inflammatory irritation.

Calderini¹⁹ tried to produce decidual cells artificially in the rabbit by irritation of the mucosa, and succeeded in producing cells much larger than normal and resembling decidual cells, but he does not claim that they are the same. Winckel¹⁶¹ admits the difficulty of diagnosis of the membrane of early intrauterine pregnancy, but asserts that the difficulty is far greater in extrauterine pregnancy.

Grechen⁹⁶ believes that from the membrane alone it would often be difficult to decide; although there are differences in the size and position of the cells, these differences are not marked enough to form a distinctive or diagnostic point.

Chiarleone²¹ says that it is not always possible to distinguish the dysmenorrheic membrane from the decidua of tubal pregnancy, but bases his diagnosis, so far as he is able to make it, on the number and distribution of the large decidual cells. V. Franque¹³⁵ asserts that no fundamental difference has been established, while Haussmann⁶¹ affirms that the structure of the two membranes is identical. Raciborski,¹¹⁸ Cory,² Denman,³⁶ Hufeland,⁷¹ Wyder,¹⁶³ Robin,¹²² Tardieu,¹¹⁷ Le Pileur,⁶³ and others, especially of the French authorities, agreeing with Haussmann, find so close a resemblance that they claim that the membrane expelled in the so-called

membranous dysmenorrhea is always the product of conception.

Many other authorities might be cited, some believing the microscopic diagnosis easy or at least possible, while others assert that it is impossible in the earlier stages of pregnancy; but enough has been said to show the importance of careful examination and of caution in making positive diagnoses in doubtful cases.

Paggi,¹⁰⁹ with De Sinéty¹³⁷ and others, divides membranes expelled into five classes: (1) fibrinous masses; (2) coagulated lymph; (3) uterine mucosa; (4) products of abortion; (5) membranes from the vagina. The third group, or "membranes expelled in membranous dysmenorrhea, present," he says, "the structure of the uterine mucosa when it, at the approach of menstruation, undergoes a hypertrophic process, consisting of proliferation of glands and capillary hyperemia. Sometimes, however, we notice the presence of pus cells and blood corpuscles. At times no glands nor epithelium are seen, but only a mass of embryonic tissue with a few vessels." Lutaud states that microscopically the membranes present all the ordinary characters of the uterine mucosa, but hypertrophied. "The American Text Book of Gynecology," agreeing with the above statement, suggests the name "hypertrophied decidua menstrualis," adding, "the blood vessels are increased in size, capacity, and number, the interglandular substance greatly increased, while the utricular glands are greatly developed, the mouths being visible to the unaided eye."

Cook²⁷ reports microscopic examinations of two membranes from one of his cases, the first showing greatly altered and necrotic mucosa of the uterus, the second showing intense congestion of vessels, extensive hemorrhage into the mucosa, some multiplication of glands, and in the deeper parts polynuclear leucocytes with masses of fibrin. The cells proper of the mucosa were much increased in number and showed frequent mitoses. In other words, the membrane presented the picture of the uterine mucosa at the menstrual epoch plus some inflammatory reaction. Special stains for bacteria gave negative results. Skene¹³⁸ states that the membrane shows all the histologic elements of the mucous membrane of the uterus, unchanged by any new or abnormal elements. He thinks there is nothing pathologic in the condition of the membrane, but that the whole morbid process consists in the separation and expulsion of the membrane *en masse*. Ruge¹²⁵

mentions two forms of changes found in the membranes expelled: the ordinary interstitial endometritis with increase of stroma, and a form in which the intercellular tissue is increased more than the stroma cells. The framework is thickened and reminds us of thick elastic fibres; while the cells are not much increased, but pushed apart by exudate, and now and then show large nuclei lying in distinct cell bodies, somewhat resembling decidual cells. Meyer⁹⁸ reports microscopic findings in eleven cases of membranous dysmenorrhea. He finds the blood vessels greatly dilated and filled with well-preserved blood cells. The stroma shows blood extravasation, concealing its structure in some parts; in others it appears rarefied. Here he finds many threads of fibrin, forming a network in whose meshes well-preserved red cells and a few white cells appear. These are found even in the gland alveoli. He notes a great increase of cells, especially toward the zone of separation, among which the small round cell figures in great numbers, so as nearly to cover the structure of the tissue. Besides these he mentions two kinds of cells not usually found in the normal mucosa: (a) cells resembling small decidual cells; (b) round or oval cells with two, three, four, or even five small, deeply stained, sharply contoured nuclei, somewhat resembling giant cells. He notes also the presence of large fibres resembling elastic fibres, and of such large amounts of fibrin in some cases as to cover the structure of the tissue. He describes two cases which show the picture of endometritis glandularis, the glands being dilated and filled with masses of fibrin and blood, and the glandular epithelium flattened, atrophied, and in some places wanting. The membranes in the eleven cases examined varied only in the form of the glands, size of the blood extravasation and blood vessels, the thickness and length of the membrane and the length and number of the villous processes extending out from its outer surface. Meyer⁹⁹ compared the membrane in two cases with curettings from the mucosa removed three days before menstruation, and notes marked differences, consisting mostly of dilatation of blood vessels, blood extravasation into the gland ducts and stroma, and the general condition of erection of the mucosa. Comparing the membrane with an early decidua vera, he found marked similarity, but thought they could be distinguished. Winter states that histologically the membranes resemble the mucosa of endometritis interstitialis, with small round cells of the stroma compressed and pressed apart

by exudate, while the intercellular substance is thickened. Combination with glandular increase and hemorrhage may be observed. He calls especial attention to the stroma cells, which, in the superficial layers, are usually small and round, as if compressed; in deeper layers, larger round cells with the cell body slightly stained, containing a nucleus which only partly fills the cell, thus somewhat resembling true decidual cells.

Leopold⁸² finds two kinds of structure: in one he finds large cells with masses of fibrin and no glands, blood vessels, nor cylindrical epithelium; these he interprets as coming from the vagina. The other shows well-preserved cylindrical epithelium, continuing into the glands, the epithelium appearing swollen with nuclei enlarged. The gland lumen is filled with mucous masses or blood cells. Sometimes the epithelium is lifted from the wall and lies free in the lumen. The interglandular tissue consists of small, generally round or angular cells, whose nucleus almost fills the cell body.

Microscopic observations were given also by Cohnstein²² (who reports cases of exfoliative vaginitis complicating membranous dysmenorrhea), by Grechen,⁵⁸ Coquard,²⁹ Guzzoni,⁶² Ramina,¹¹⁹ and others, in which nearly the same points were mentioned as those already given. After examining fifty-two membranes from one case and five from another, Coquard calls attention especially to the usual change of the superficial and glandular epithelium from the normal cylindrical type to a low columnar or cuboidal form.

In my own cases, the material for which was obtained from the pathological laboratory of the University of Michigan through the kindness of Dr. Warthin, I have made a special study of the microscopic structure, and believe that a report of my findings will be not without interest and value, as only from a thorough knowledge of the pathologic changes found in the disease can we hope to arrive at an understanding of the nature of the affection and thus at the rational method of treatment. The first two cases were hospital cases, the third and fourth private cases, the third being at the time under the care of Dr. Mosher.

CASE I.—Miss E., age 37. Pain begins in back and pelvis three days before each menstrual period, increases in severity till the beginning of the flow, when a membrane is expelled with expulsive pains. This has happened each month since the establishment of menstruation in her fourteenth year, and

no treatment has proved of any benefit. Her general health is good.

Microscopic examination showed the superficial epithelium mostly desquamated. In the few patches of epithelium still present we find a variation from the normal tall, columnar cell to flattened or cuboidal cells, which in some places seem to occur in several layers. The nuclei are large, nearly filling the cell. Generally even the epithelium which is present is partly lifted off from the underlying parts, giving a ragged, uneven appearance to the superficial surface.

The glands, of which only the upper part is found, are fewer than normal and lined with well-preserved epithelium, sometimes resting on the basement membrane and sometimes lifted off and lying in masses in the lumen. This epithelium is generally columnar in type, but may be low columnar or cuboidal and either simple or stratified or pseudo-stratified. Sometimes the glands are seen in cross-section, sometimes in longitudinal section, the lower end of the gland not being seen, although often long pieces of glands may seem to be pulled out from the underlying tissue when the separation takes place and project from the outer surface, forming some of the villous processes spoken of by many authors.

No blood vessels with distinct muscular walls were seen, but many dilated capillaries and blood spaces with simple endothelial lining. None of these contain well-preserved blood cells, but some are partly filled with granular masses with a few leucocytes and fibrin fibrils, while some are empty.

The interglandular and intervascular stroma varies in different parts of the same sections as well as in different sections from the same membrane. In some parts there are few cells; the tissue appears much rarefied, consisting of a loose network of very fine fibrils containing fine granules, rarely lymphocytes, and a few polynuclear leucocytes, especially near the glands and blood vessels. The few stroma cells present are enlarged, round or oval or polygonal or fusiform cells, with granular and often vacuolated protoplasm. The nuclei are generally somewhat enlarged and eccentric, some deeply staining, globular nuclei, some less deeply staining and showing chromatin network distinctly, and some in the process of karyokinetic cell division. The nuclei as well as the protoplasm appear at times vacuolated and hydropic. In other parts of the sections the cells are closer together and the tissue appears denser. In these preparations no blood extravasation was

found in any part of the section. A section of this membrane is represented in Fig. 1.

CASE II.—Mrs. S., age 33. Has never borne children. The clinical history is similar to that of Case 1. The membrane, which was examined in this case, presented a nearly perfect cast of the uterine mucosa, triangular in form, and showing

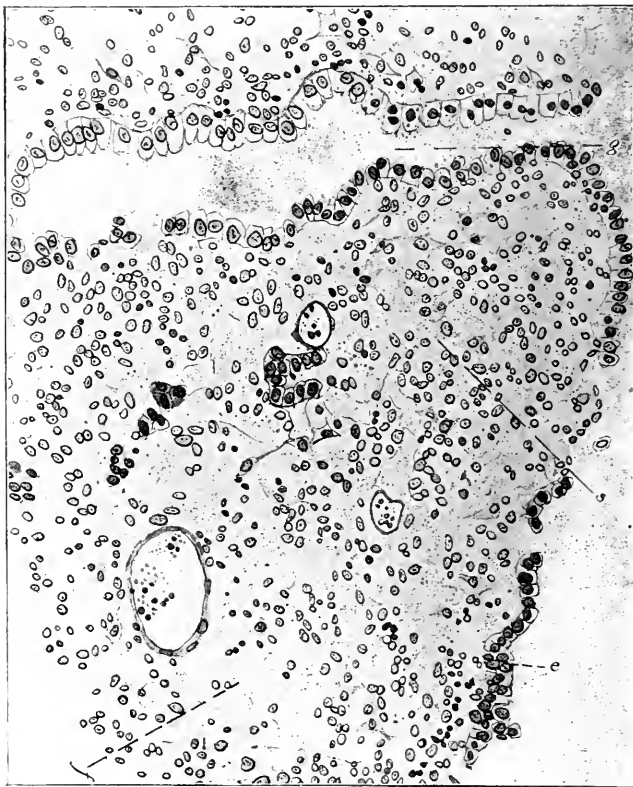


FIG. 1.—Cross-section of membrane from Case 1. Sketched under the one-sixth inch objective and No. 2 eyepiece. Reduced to one-third size of drawing. *e*, surface epithelium; *g*, glands; *s*, stroma; *f*, fluid exudate.

All the figures were sketched with the aid of the camera lucida and reflected to the level of the table.

the tubal openings like the membranous casts so often observed in this affection.

The microscopic examination showed very little of the superficial epithelium intact, and that little was low columnar or cuboidal epithelium, either in single layer or occasionally appearing as if stratified.

The glands are enlarged, lined by flattened or cubical epithelium, usually in a single layer, but occasionally appearing to consist of several layers. This appearance may be, at least in part, due to the angle at which the section of the gland happens to be made, or to the fact that the section is cut through a fold of the ectatic gland. Although the most marked change in this membrane, as in that of Case 1, is in the interstitial tissue, yet there is some glandular increase in some parts of these sections.

The much-enlarged blood spaces contain masses of fibrin

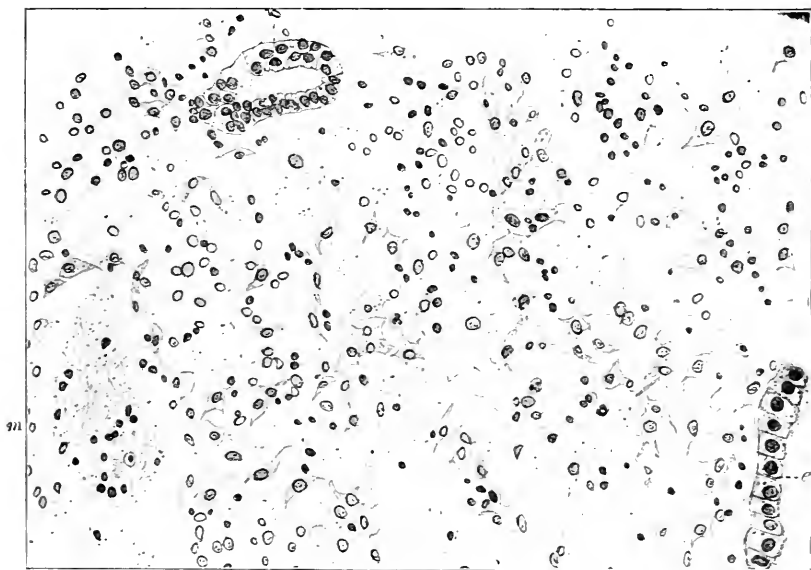


FIG. 2.—Cross-section of membrane from Case 2. Sketched under one-sixth objective, No. 2 eyepiece. Reduced to one-third size of drawing. *e*, superficial epithelium; *g*, gland; *f*, fluid exudate; *m*, fibrin mass

with a few leucocytes. There is no blood extravasation into the tissues. The stroma cells are enlarged, with protoplasm staining very faintly and markedly vacuolated, while the nuclei are either enlarged and vacuolated or compressed and pushed to one side. Some of these cells are shown in Fig. 3, while a small part of a section of the membrane is represented in Fig. 2. In general the picture is the same as in Case 1, except for the glandular increase and the more marked rarefaction and hydropic condition of cells and intercellular substance. In both we have a picture of that form of endometritis interstitialis in which, as described by Ruge, the intercellular substance

is increased, pushing the cells apart. In the second case there is also a beginning endometritis glandularis.

CASE III.—Mrs. D., age 30. Has suffered from membranous dysmenorrhea since the beginning of menstruation. Has never had children. Her periods are somewhat irregular, very painful, the pain being expulsive in character. Local examination showed the uterus normal in position, but somewhat enlarged and congested. The left ovary seemed somewhat enlarged and tender. Soon after the membrane which

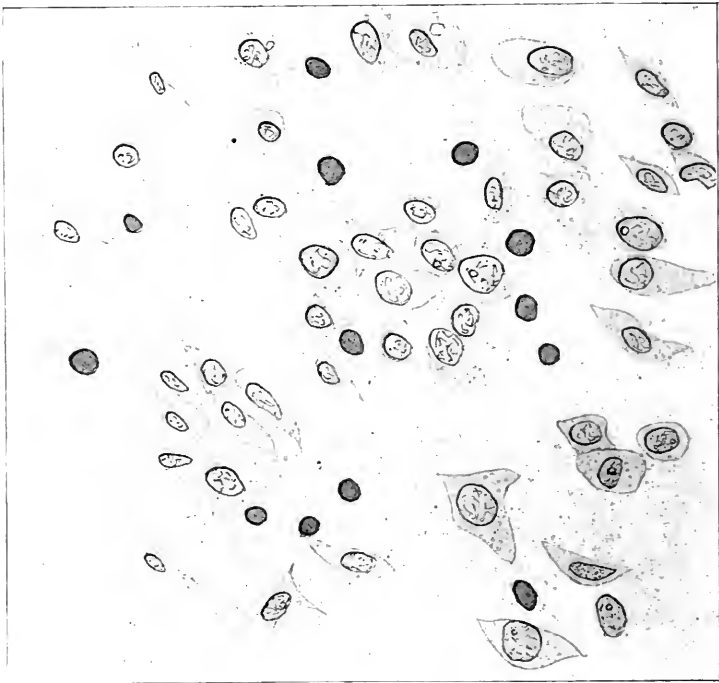


FIG. 3.—Section of a few of the altered stroma cells from Case 2. Sketched under the one-twelfth inch oil immersion, No. 2 eyepiece. Reduced to one-half size of drawing.

I examined was passed, the patient was curetted and the curettings also examined. The curetting, represented in Fig. 4, showed the picture of *endometritis glandularis et interstitialis*. The glands were markedly increased in number and size, and lined by a single layer of tall, columnar epithelium. The interglandular stroma consisted mostly of round or oval cells, rather closely packed together, with very little intercellular substance. In some places, however, the cells are crowded apart by blood extravasate, the red blood cells being

well preserved, leucocytes increased, and few stroma cells in these areas.

The cross-section of the membrane, as seen in Figs. 5 and 6, has its superficial epithelium well preserved, consisting mostly of tall, columnar cells in a single layer, closely resembling those lining the cavity of the uterus. In some parts, however, the epithelium is more flattened and several layers are seen. The glands are much increased in size and number and lined by tall, columnar epithelium, generally in a single layer. The principal differences between the curetting and the membrane are in the interglandular stroma. In the membrane the

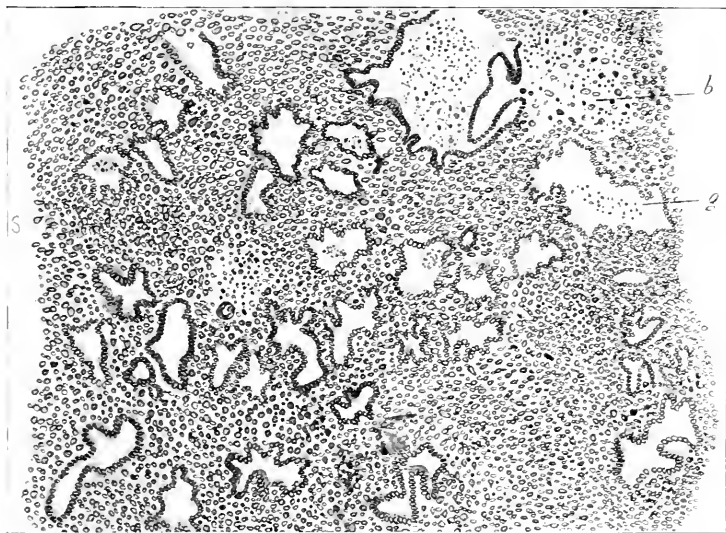


FIG. 4.—Section of curetting from Case 3. Sketched under two-third inch objective and No. 2 eyepiece. Reduced to one-third size of drawing. *b*, blood extravasate; *g*, gland.

cells are pushed apart by exudate, the cells being enlarged and vacuolated, while the nuclei are generally enlarged and pushed to one side. Many white blood cells are seen all through the meshes of the stroma. The blood spaces and capillaries are much enlarged and most of them filled with blood whose cells are fairly well preserved. In many parts large blood extravasates have pushed the glands and stroma cells apart, and so filled all the meshes of the stroma as to conceal its structure. This blood extravasation seems especially marked in the deeper parts of the membrane, though present also quite near the surface. The chief difference between the curetting and the

membrane is in the more edematous, hydropic condition of the stroma of the latter, both the cells and intercellular substance. Many cells—both epithelial and stroma cells—show mitoses.

CASE IV.—Miss X., age about 25. She was always well and strong, with no menstrual difficulty, until about five years ago, when, as the result of a fall from her wheel, as she thinks,

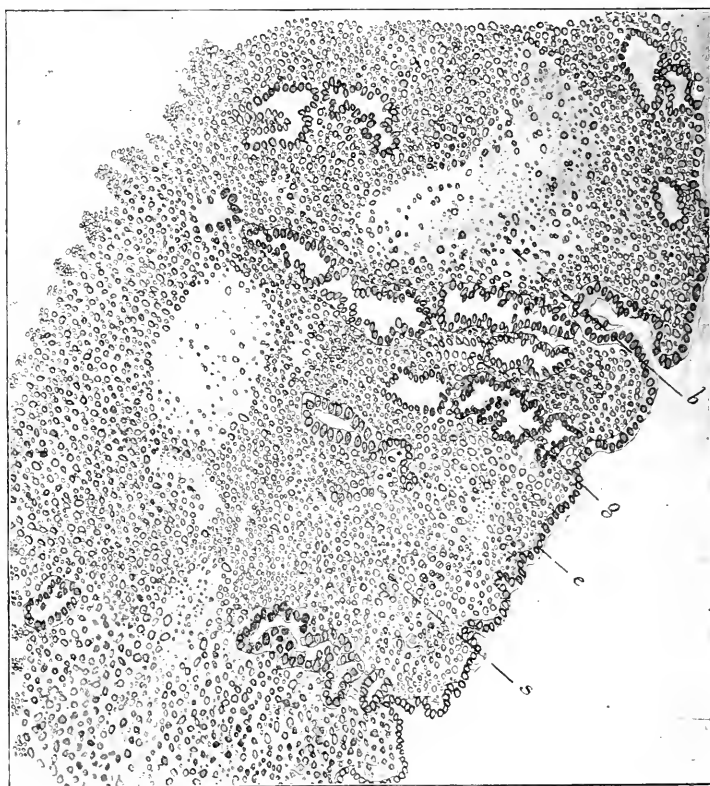


FIG. 5.—Cross-section of membrane from Case 3. Sketched under two-third inch objective and No. 2 eyepiece. Reduced to one-third size of drawing. *e*, superficial epithelium; *g*, glands; *s*, stroma; *b*, blood extravasate.

dysmenorrhea developed, which later became membranous. Local examination showed the uterus retroverted and retroflexed, and there is a constriction of the internal os. Membranes are expelled about once in two months with the usual dysmenorrhoeic symptoms. Lately her periods have become irregular and her general health is affected, so that she does not feel well at any time. Various methods of treatment have

been tried and she has been twice curetted, but nothing has proved more than temporarily beneficial.

Sections have been examined from two membranes passed by this patient at an interval of about one year. The sections from the first membrane closely resemble those from Case 3. The glandular increase is still more marked. There are large blood extravasates near the surface, while in the deeper parts the stroma cells and glands are pushed apart and separated by



FIG. 6.—Cross-section of part of membrane from Case 3. Sketched under one-sixth inch objective and No. 2 eyepiece. Reduced to one-third size of drawing. *e*, superficial epithelium; *g*, gland; *s*, stroma; *b* blood extravasate; *f*, fluid exudate.

large amounts of exudate, the spaces thus formed showing only fine fibrils of reticulum, fine granules of exudate, and few enlarged and vacuolated stroma cells with a few leucocytes. A few of these cells are shown in Fig. 7.

In the second membrane, shown in Fig. 8, the epithelium—both that lining the surface and that lining the glands—seems much changed. A small piece at one extremity is quite typical stratified pavement epithelium, evidently expelled from the

cervix, which changes abruptly to typical simple columnar epithelium closely resembling that normally lining the cavity of the uterus. The columnar epithelium shows changes also, becoming flattened, heaped up in several layers, some of the cells being brushed off, leaving a ragged, uneven surface, and among the epithelial cells and on their surface leucocytes are observed. Some of the changes observed in the epithelium may be interpreted as due to a somewhat oblique sectioning of

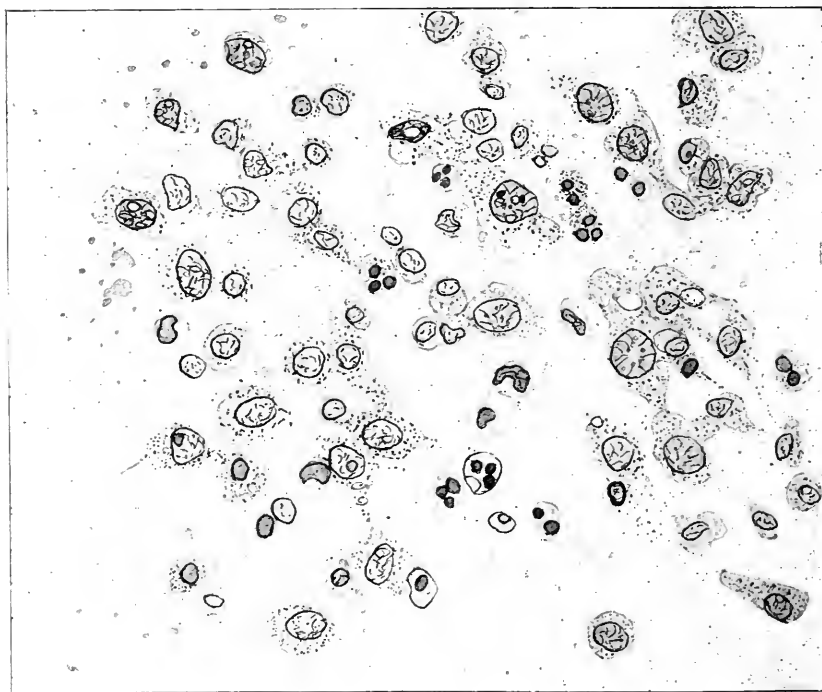


FIG. 7.—Section of some of the cells from the first membrane of Case 4. Sketched under the one-twelfth inch oil immersion, No. 2 eyepiece. Reduced to one-half size of drawing. Shows the granulated, vacuolated protoplasm and vacuolated nuclei of some of the cells.

the mucosa, but some of them seem to show a somewhat atypical character not explicable in this way, while the stratified pavement epithelium would seem to indicate that the exfoliative process extended well down into the cervix, as in the cases observed by Cohnstein,²¹ Hoggan,⁶⁹ and Leopold.⁸² In the enlarged ectatic glands, also, the epithelium shows similar changes, seeming to indicate an excessive proliferation of epithelial cells. The lumen of the gland is sometimes empty,

sometimes filled with granular or fibrinous masses and sometimes with red blood cells and leucocytes.

The much-widened capillaries, lined by a single layer of endothelial cells, and the small arteries with a thin muscular coat, are packed full of well preserved red blood cells. Much blood is also free in the tissues. In these sections the stroma appears much denser than in the first membrane. The stroma cells are somewhat larger than normal, with large nuclei and

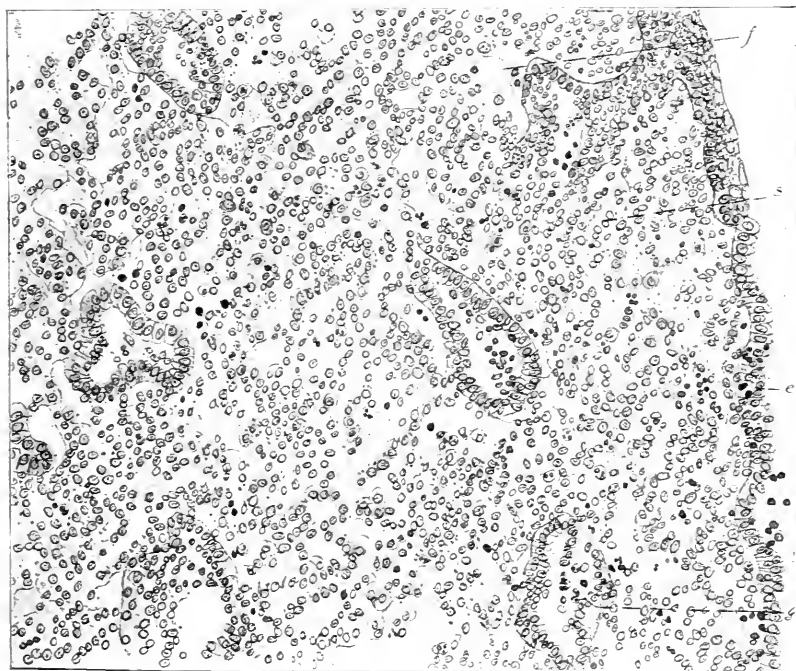


FIG. 8.—Cross-section of part of the second membrane from Case 4. Sketched under one-sixth inch objective, No. 2 eyepiece. Reduced to one-third size of drawing. *e*, superficial epithelium; *g*, gland; *s*, stroma; *f*, fluid exudate. Superficial epithelium at one side shows the stratified squamous epithelium, changing abruptly to simple columnar.

generally small amount of protoplasm; they are mostly round or oval, though some are fusiform and a few are even branched somewhat, while most of them are packed closely together with very little fluid exudate or intercellular substance. Occasionally, however, especially in the deeper parts, collections of fluid have pushed the tissues apart, crowding still more closely the surrounding cells. Many white blood cells, both mononuclear and polynuclear, are found.

CASE V.—Mrs. C., age about 30. Has always been well

until about a year ago, when she missed a period. At the time of the next period she suffered intense pain and finally expelled a membrane with considerable hemorrhage. This membrane, on examination, proved to be the abortive product of conception. Two months later she again passed a membrane at the time of her menstrual period. Since then no membranes have been expelled and the patient has been well. The second membrane, when examined, was seen to consist of masses of fibrin, with a few leucocytes and red blood cells, but showing no uterine structure, thus indicating that it was a case of pseudo-membranous dysmenorrhea. I have mentioned this case in connection with the four cases of true membranous dysmenorrhea to show the similarity of clinical symptoms and the far different prognosis and treatment in the two kinds of dysmenorrhea.

CASE VI.—Since this paper was in press a case has come to me in my own practice which seems to me of sufficient interest to deserve a brief mention in this connection. Mrs. S., age about 40, has always been well, with no trouble at her menstrual epochs and perfectly regular. There has been no dysmenorrhea and no membrane has been observed. In June, 1900, her period was delayed about ten days and she thought she noticed some indications of pregnancy. Menstruation began normally, however, with no pain or other disturbance, and on the second day she passed, without pain, a membrane, which she brought to me for examination. The microscopic structure closely resembled that of the membrane in Case 3. The superficial epithelium was desquamated in some places; in others, flattened, irregular, and infiltrated with leucocytes. The glands were increased in number, somewhat enlarged, the glandular epithelium desquamated in some places; in others, flattened; in others, enlarged, hydropic, and vacuolated. The stroma showed some areas of blood extravasation and much fluid exudate between the stroma cells, which were increased in number, enlarged and vacuolated, the nuclei being pushed to one side and also vacuolated. While many of the cells were distinctly enlarged, they did not resemble decidual cells, and I could not, from the microscopic finding, give a diagnosis of pregnancy. Her next period was also delayed one week, but no membrane was passed.

The case seems to me interesting because of the clinical history and the difficulty which may arise in diagnosing these cases and in reconciling the clinical history with the micro-

scopical findings. Should this develop into a case of ordinary membranous dysmenorrhea, it is none the less peculiar from the fact of its developing without apparent cause so late in life.

The histologic changes found in membranes expelled in membranous dysmenorrhea, as observed by other writers and as noted by myself, may be briefly summarized as follows: 1. The superficial epithelium is very variable. We may find, as in one of my cases and in cases cited by Cohnstein, Hoggan, and Leopold, portions of stratified pavement epithelium from the cervix or vagina. It may consist of normal, though somewhat enlarged and hydropic, tall, columnar cells, or these may be flattened or cubical cells, either in single layer or in several layers, or it may be wanting over much or all of the preparation. This observation is especially important in view of the fact that Amann and many others lay stress upon the retention of the normal tall, columnar epithelium in these membranes in differentiating them from the products of early abortion.

2. The glands may be fewer than normal or greatly increased in number, but are generally much enlarged. They may be lined with a layer of tall, columnar cells, a layer of cubical cells, several layers of cubical cells, or the lining epithelium may be, as noted by Meyer, very much flattened, endothelium-like plates, or even entirely wanting. This observation has not been verified in any of my preparations. This variable condition of the glands also deprives us of one of the strong differential points between the membrane of abortion and that of membranous dysmenorrhea. It must be admitted, however, that according to my observations the epithelium is rarely so much flattened or the glands so few as in the true decidua, though Paggi¹⁰⁹ and Guzzoni report cases in which no glands were found, and cases with no superficial epithelium have been observed by several writers.

3. The blood vessels are either compressed, few showing in a preparation, or they are enlarged and either filled with fresh blood or with granular or fibrinous débris, or they are empty.

4. In the interglandular stroma the cells may be much increased in size and number and may even resemble decidual cells. But in none of my cases have these cells approached the size of true decidual cells, and, as noted by Mayer,⁹⁴ Löhlein,⁶⁵ and Schröder,¹²⁰ their protoplasm is vacuolated and granular, while that of the decidual cell is homogeneous. I have not seen in my cases any of the small giant cells mentioned by Meyer.⁶⁶

The glycogen test might be applied to differentiate the membranes in doubtful cases, but I think would usually be unsatisfactory, as these membranes are usually passed with urine, which would dissolve the glycogen. The cells are in many cases separated by fluid exudate, but in some cases, as in my Cases 3 and 4, the cells nearly fill the meshes of the network, leaving little intercellular tissue. The presence of coarse elastic fibres, as mentioned by Ruge¹²⁸ and Meyer,⁹⁶ and emphasized as an important diagnostic point by Le Pileur,⁸⁸ has never been noted by me, nor have I been able by the special orcein stain for elastic fibres to show their presence in my cases. The blood extravasation noted by Meyer and others as always present was absent in two of my cases, the extravasate being entirely fluid.

The etiology of this affection is one of the most important questions from the standpoint of treatment and one of the most difficult to answer. Hence upon the question of etiology we find the greatest differences of opinion. Thomas and Mundé, in their "Text Book of Gynecology," 1891, thus summarize the opinions of some of the older authors on this question:

"1. It was formerly believed that a layer of plastic lymph was, as a result of endometritis, thrown out over the uterine wall, which, becoming organized, constituted the cast of the uterus. This belief was entertained by Montgomery,⁹⁹ Dewees,⁴⁰ Siebold,¹³¹ Franck,⁸³ Naegele,¹⁰² Desormeaux,⁹³ and others.

"2. It is now generally regarded as an exfoliation of the entire mucous membrane of the uterine body, due to congestion and irritation transmitted to the uterus from the ovary. This view, conceived by Oldham, is adhered to by Semelaigne¹³² and others.

"3. The pathologic explanation just mentioned being adopted, the cause of the occurrence of the exfoliation is attributed, in the words of Scanzoni,¹²⁸ 'to a considerable hyperemia of the walls of the uterus, which is followed by an excess in the development of the mucous membrane.' This theory is adopted by Courty,²⁶ Hegar,⁶⁶ Eigenbrodt,⁴⁶ and others. The last two authorities have proposed for it the name 'dysmenorrhea apoplectica.'

"4. Prof. Simpson¹³⁵ attributed the exfoliation 'to an exaggeration of a normal condition or to an exalted degree of a physiologic action.' Mandl⁹⁰ declares that Rokitsansky,¹²³ Robin,¹²² Mayer,⁹⁴ and others adopt this view.

"5. It is regarded as due to an inflammatory condition by

Klob," who declares that those pathologists are not far from the truth who describe such cases as endometritis. This view is indorsed by Tilt,¹⁴⁹ Braun,¹⁸ and others.

"6. By some the membrane is regarded as due to a deciduous formation, excited by conception, which has just been established or is ovular in its character. The first of these views is maintained by Hausmann⁶⁴ and admitted in some cases by Rokitansky,¹²³ and the second was advanced by Raciborsky."¹¹⁸

Later writers have added little that is new in regard to the etiology of this affection. In addition to those already cited, the view advanced by Oldham that the exfoliative process is due to some nervous irritation transmitted from the ovary has been strongly supported by Skene¹³³ and Stroinsky.¹⁴² The latter reports the results of some experiments on the spermatic ganglion in the sheep. He tried the effect of pressure, electrical stimulation, and phosphorus. He found in all these cases changes in the uterine mucosa somewhat analogous to those in normal menstruation and in membranous dysmenorrhea. As the result of his experiments he advances the following theory: "The menstrual process in all the mammalia and the beginning of menstruation in women bear a striking resemblance to digestion, the minute anatomical changes in the uterine membrane being the same as in the gastric membrane, and I regard menstruation at large as a nutritive irritation excited by reflex action from the irritated ovarian nerves. But in women, the uterine nerves being over-irritated and the glands exhausted, there appears a fatty degeneration in the uterine membrane, so as to cast off a part or the whole membrane. But here we must find the limits between the physiological and the pathological state, between health and disease, by the clinical history."

The theory conceived by Scanzoni, of excessive hyperemia causing an apoplectic condition of the mucosa, is held also by Gunarrow,⁶⁰ Löhlein,⁶⁵ and Cook,⁷⁷ the latter saying that it can only be accounted for on the theory that capillary hemorrhage lifts off the superimposed membrane, adding: "It would seem a perversion of nutrition and function rather than an organic disease. It may be that there is some change of innervation by which the afflux of blood is so sudden and abundant that the membrane is forced off before the ordinary degenerative changes can occur." Löhlein thinks that the dysmenorrheic membrane is merely an exaggeration of the process of normal menstruation, arising from some subacute or chronic disease

of the uterus. He says: "For the cause of this we must admit a greater thinness and delicacy of the deeper tissues or a greater density of the superficial. Increased blood pressure with increased blood exit will cause a dissecting hemorrhage and not a free bleeding on the surface." He considers the disease as not a *morbus sui generis*, but in most cases a pathological phenomenon which comes under different circumstances and is complicated by different disease processes in the reproductive organs.

The theory that this is but an exaggeration of the normal process of menstruation is supported by Cook,²⁷ Skene,¹³⁸ Coquard,²⁹ Lutaud,⁸⁷ and others.

Far the largest number of authorities agree on the theory that it is due to an inflammatory process in the mucosa. Among these are Leopold,⁸² Hoggan⁶⁹ (G. and F. E.), Huchard and Labadie-Lagrave,⁷⁰ Grechen,⁸⁸ Kleinwächter,⁷³ Taulier,¹⁴⁸ Churchill,²³ Copland,²⁸ Troque,¹⁵⁰ Martin,⁹¹ Guzzoni,⁹² Ziegler,¹⁶⁵ Porro,¹¹⁴ Pozzi,¹¹⁵ Schröder,¹³⁵ and Auvard⁶ (the last five being cited by Ramina). In opposition to this, Skene thinks that a well-defined endometritis cannot occur at the same time as membranous dysmenorrhea. To this list may be added those who believe it due to some local malcondition in the uterus, such as excess of fibrous tissue, malposition, contraction of the os, etc. Among these are Williams,¹⁵⁹ Wyder,¹⁶³ Schröder,¹³⁰ Ruge,¹²⁵ Fritsch,⁸⁴ Surer,¹⁴⁶ Siredey,¹³⁶ Sims,¹³³ Mackintosh,⁸⁸ and Goodell.

To these theories, as given by Thomas and Mundé, may be added a seventh, suggested by Cohnstein,²² that the disease is due to some general physical or psychical abnormal condition. He bases his conclusion upon his observation that of the 62 cases which he collected from the literature, 42, or 67 per cent, were caused by or connected with some general disturbance, often nervous—as hysteria, chlorosis, anemia, etc. In the 2 cases which he himself reports, he believed hysteria to be the cause, the hysteria antedating the dysmenorrhea, which in the one case seemed to be psychic in etiology, while in the other it began after a marked increase in hysterical symptoms. Winckel reports 1 case which he refers to syphilis, and the view that some general disease is the cause is supported, at least in part, by Bernutz,¹¹ Breisky¹⁶ (cited by Grechen⁸⁸), Beigel,¹⁰ West,¹⁵⁸ Courty,²⁶ Hegar,⁶⁸ Mayer,⁸⁴ Coquard,²⁹ and Auvard.⁶

In formulating these theories, the authors seem many times not to have carefully distinguished the cause from the effect or from an accompanying condition. While, in many cases of

membranous dysmenorrhea, endometritis or some other local malcondition is present, as shown by the histologic structure and by the clinical symptoms, yet in many other cases cited in the literature, as well as in the first 2 of the 4 cases cited by me, no local disease is discoverable, the membrane shows only the hyperemia and congestion incident to the menstrual epoch, the general health is good, and the patient describes herself as being perfectly well between her periods. In other cases, on the other hand, there are clinical evidences of endometritis, malposition of the uterus, constriction of the internal os, or ovarian congestion. In these cases, as shown in my last two cases, the membrane shows the histologic structure of a true endometritis, either interstitial or glandular, or both, the interstitial in these cases consisting not merely of a fluid exudate separating the stroma cells, but of a great increase of cells.

The general nervous condition, while often a natural consequence of the long continuance of this disease, and while perhaps often present before the observation of the membranes, is not a sufficiently uniform condition to be considered the cause of the disease.

The histologic changes in the uterine mucosa before, during, and after normal menstruation have been discussed by Williams,¹⁶⁹ Haussmann,⁶⁴ Hegar⁶⁵ and Mayer,⁶⁴ Ruge,¹²⁵ Moericke,⁹⁷ De Sinéty,¹³⁷ Coquard,²⁹ Leopold,⁸² and Wyder.¹⁶³ Meyer⁹⁶ has also compared the membrane exfoliated in two of his cases with curettings taken from the same cases three days before menstruation. Coquard, while he believes it more logical to attribute membranous dysmenorrhea to exaggeration of the normal menstrual changes, attributes the uncertainty to the directly opposed views of normal menstruation, Ruge, Moericke, and De Sinéty claiming that there is no desquamation during the normal menstruation, but a simple congestion with hemorrhage due to transudation without appreciable rupture of vessels. On the other hand, Williams, Leopold, Wyder, Minot, Hensen, and many others uphold that there is desquamation of the mucous membrane, either molecular or in larger or smaller pieces, at each menstrual epoch. Nagel¹⁰¹ thus briefly summarizes the changes taking place during the process of menstruation, according to this view. The hemorrhage in menstruation is due to the expulsion of the mucous membrane in fragments, and thus the rupture of blood vessels, mostly capillaries. Preceding this process comes a swelling of the mucosa and widening of the vessels five to ten days before the menstrual epoch, forming the so-called decidua men-

strualis, which, however, as Wyder has shown, contains no decidual cells. The loosening of this decidua menstrualis is accompanied by hemorrhage into the subepithelial tissues, due probably to a diapedesis and not to rupture of vessels. This blood extravasation causes a disturbance of nutrition of the superficial parts of the mucosa and necrosis, leading to expulsion of the same. Williams,¹⁵⁹ Hensen,⁶⁷ and many others believe there is a fatty degeneration of the mucosa. The removal of the superficial parts allows the blood to come to the surface. The purpose of this whole process is to prepare the uterus for the reception of the ovum, if fructified, in which event the development goes on to the formation of the decidua graviditatis in which the ovum is implanted.

Meyer finds the curetting taken three days before menstruation markedly different from the membrane expelled in the same case at menstruation, the gland ducts in the membrane fewer and straighter and narrowed, glands enlarged and filled with blood, blood vessels dilated, and blood extravasations in various parts.

These changes are, it seems to me, analogous to those taking place in a normal mucous membrane in the few days preceding menstruation. Practically the same differences I have noted between the expelled membrane and the curetting taken midway between the menstrual epochs.

The theory, then, which seems to me most consistent with the histologic findings in the cases reported in the literature, as well as in those examined by myself, since inflammation is not a uniformly accompanying condition, and conception may often be positively excluded, is that, perhaps under some abnormal local nerve influence, which may be congenital (since in many cases the disease begins at puberty), or even, as suggested by Gautier,⁶⁶ hereditary, or which may, through injury or local disease, be later acquired, the normal menstrual congestion and blood extravasation or fluid exudation is so greatly increased that the deeper tissues break and thus loosen the thickened decidua menstrualis *en masse* before nutrition has been sufficiently interfered with to cause its degeneration.

BIBLIOGRAPHY.

1. AMANN: Mikroskopische Gynäkolog. Diagnostik, 1897.
2. *ARAN: Mal. utérus et annexes, 1858.
3. *ASWELL: Practical Treatise on Diseases Peculiar to Women. Second edition.

* Seen only in reviews or not at all.

4. *ATTHILL: *Traité des maladies des femmes.*
5. *AUVARD: Cited by Ramina.
6. *AVELING: Cited by Lutaud.
7. *BARNES: *Tr. clin. des mal. des femmes*, 1876.
8. *BARRETT: *Sterility and Membranous Dysmenorrhea.* St. Louis Courier Med., 1881, v., 505.
9. *BARNETT: *Arch. de Tocol.*, 1881.
10. BEIGEL: *Arch. f. Gynäk.*, ix., 84.
11. *BERNUTZ: *Arch. de Tocol.*, Par., 1879, vi., 1-15. Also, BERNUTZ AND GOUPIL: *Leçons clin. sur les mal. des femmes.*
12. *BORDIER: *Gaz. hebdomadaire*, 1877.
13. *BOUCHACOURT: *Journ. de Méd. de Lyon*, 1868.
14. *BOURGAREL: *Un. Méd. Provence*, 1864.
15. *BOURNONVILLE: *De la dysmen. membran. et de son traitement.* Journ. Acc., September 15, 1883.
16. *BREISKY: Cited by Grechen.
17. *BURTON: *Br. Med. J.*, 1884, t. ii. So-called Obstructive Dysmenorrhea.
18. *BRAUN: *Lehrbuch der ges. Gynäk.*, 1881. Cited by Thomas and Mundé.
19. *CALDERINI: *Cellule simili a quelle della decidua ottenute sperimentalmente mediante stimolo mechan.* Giornale dell' Accad. di Med., 1883, i.
20. *CHARPIGNON: *Gaz. des Hôpitaux*, 1854.
21. *CHIARLEONE: Cited by Ramina.
22. COHNSTEIN: *Arch. f. Gynäk.*, 1881, Bd. xvii., 1.
23. *CHURCHILL: *Diseases of Women*, Dublin, 1864. Cited by Coquard.
24. *CORY: *On Membranous Dysmenorrhea.* Tr. Obstet. Soc. London, 1878, xx., 113.
25. *CORY: *Ann. de Gynéc.*, 1878.
26. *COURTY: *Traité prat. des mal. de l'utérus.* Third edition.
27. COOK: *AMER. JOUR. OF OBSTET.*, 1898, vol. xxxvii., p. 786.
28. *COPLAND: Cited by Coquard.
29. COQUARD: *Contrib. à l'étude de la dysmen. membr.*, Lille, 1887. *Rev. méd. chir. d. mal. des femmes*, Par., 1883, x., 270.
30. *CORNIL: *Leçon sur l'anat. path. des metrites, des salpingites et des cancers de l'utérus*, Paris, 1889.
31. *COSTE: Cited by Coquard.
32. CUZZI: *Casuistica di ostetricia e ginec.* Annual. di Ostet., 1887, cap. ii.; also, *Ann. di Ostet.*, Milano, 1882, iv., 152.
33. *DAVIS: *Amer. Practitioner*, 1877.
34. *DAVAINE: *Société de Biol.*, 1865.
35. *DELORE: *Journ. de Méd. de Lyon*, 1868.
36. *DENMAN: *An Introduction to the Practice of Midwifery*, 1794.
37. *DE CRISTOFORIS: Cited by Ramina.
38. DE SINÉTY: *Des rapports qui existent entre la dysm. membr. et la menst. normal.* Ann. de Gynéc., 1883.
39. *DESORMEAUX: *Dictionnaire de Méd.*, Paris, 1828. Cited by Thomas and Mundé.
40. *DEWEES: *Krankh. des weibl. Geschlechts.*, Berlin, 1837. Cited by Lutaud.
41. DUKE: *Membr. Dysmen.* Med. Times and Hos. Gaz., London, 1895, xxiii., 449.

42. *DUNCAN: *Med. Times and Gazette*, 1877.
43. DUNNING: *Membr. Dysmen. Am. Gynec. and Obst. Journal*, New York, 1897, x., 433.
44. *DUTREMBLAY: *Contrib. à l'étude de la dysmen. membran. par le microscope*, Paris, 1887.
45. *EIGENBRODT: Cited by Lutaud.
46. *EVANS: *Membr. Dysmen. Tr. South Car. M. Assoc.*, Charleston, 1881, xxxi., 91.
47. *FARRE: *Arch. of Medicine*, 1858-9.
48. *FAURE: *Gaz. des Hôpitaux*, 1854.
49. FINKEL: *Arch. f. path. Anat.*, Bd. lxiii.
50. *FINEL: *Thèse de Paris*, 1858.
51. *FOLLIN: *Bull. Soc. Biol.*, 1849.
52. *FORREST: *Med. News*, 1885.
53. *FRANCK: Cited by Lutaud.
54. *FRITSCH: *Handb. der Frauenkrankh. von Billroth und Luecke*, 1885, i., p. 985.
55. GAUTIER: *Congrès de Genève*, 1877; also, *Ann. de Gynéc.*, 1877; also, *De la pathog. de la dysmen. membran.*, 1878; also, *Cong. Périod. Internat. d. Sc. Méd.*, compte rendu, Genève, 1878, 460.
56. *GAILLARD: Cited by Lutaud.
57. *GALLARD: *Troubles de la menstruation*, 1832.
58. GRECHEN: *Gynäk. Studien und Erfahrungen*. Berlin, 1888.
59. GREENHALGH: *The Lancet*, Nov., 1877.
60. *GUNARROW: *Ueber Menstruation und Dysmen.* Volkmann's Sammlung, 1874.
61. GUNNING: *Treatment of Mem. Dysmen. AMER. JOUR. OF OBSTET.*, N. Y., 1891, xxiv., 305.
62. GUZZONI DEGLI ANCARANI: *Contrib. all'istolog. della dism. mem.* *Gazz. d. Osp.*, Milano, 1889, x., 658.
63. *HART AND BARBOUR: *Manuale de Gynéc.* Trad. di N. Sisca, Milano, L. Vallardi, 1887.
64. *HAUSSMANN: *Berlin. B. z. Geb. und Gynäk.*, Bd. i.
65. *HEGAR: *Monatsschr. f. Geburtsh.*, 1863, xxii.
66. HEGAR MAIER: *Arch. f. Path.*, Bd. lii.
67. HENSEN: Cited by Coquard.
68. *HERMANN ET TOURNEAUX: *Dict. des Sciences méd.*, Art. Uterus.
69. HOGGAN, G. AND F. E.: *Zur. Path. und Therap. der Dysmen. membr.* *Arch. f. Gynäk.*, 1876, x., p. 301.
70. HUCHARD AND LABADIE-LAGRAVE: *Arch. gén. de Méd.*, 1870.
71. HUFELAND: Cited by Coquard.
72. KEOGH: *The Diagnostic Value of Microscop. Examinations. AMER. JOUR. OF OBSTET.*, 1898, xxxviii., p. 182.
73. KLEINWÄCHTER: *Wien. Klinik*, 1885, xi., 33.
74. *KLOB: *Path. Anat. der weibl. Sex.*, Wien, 1864.
75. *KÖLLIKER: Cited by Saviotti.
- 75A. KÜRSTERN: Cited by Coquard.
76. *LABOULBÈNE: *Comptes rendus de la Soc. de Biol.*, 1850.
77. *LABOULBÈNE: *Tr. Anat. Path.*, 1879, p. 836.
78. *LABOUSQUIÈRE: *Ann. de Gynéc.*, 1886.
79. LATTEY: *The Lancet*, Jan. 17, 1880.

80. *LÉBERT: Société de Biologie, 1850.
81. LEOPOLD: Ueber die Dysmen. membr. Arch. f. Gynäk., 1876, x., p. 293.
82. LEOPOLD: Arch. f. Gynäk., 1877, xi.
83. *LE PILEUR: Revue obstét. et gynec., Juin, 1886, ii., 247.
84. *LUDLAM: Leçons clin. et didac. sur les mal. des femmes. Claude E. Dorion, Parrigi A. Delahaye, E. C. 1879, p. 158.
85. LÖHLMAN: Zur Ätiol. der sog. Dysmen. membr. Zeitschr. f. Geburtsh. und Gynäk., 1886, xii., 465.
86. *LUMPE: Central. f. Gynäk., Août, 1885.
87. *LUTAUD: Commun. à la Soc. de Méd. de Paris, Juillet, 1882.
88. *MACKINTOSH: Cited by Coquard.
89. MADDEN: Mem. Dysmen. J. Am. Med. Assoc., Chi., 1896, xxvi., 551.
90. *MANDL: Wien. Press., 1869; also, AMER. JOUR. OF OBSTET., vol. ii., p. 402.
91. MARTIN: Berlin. klin. Wochenschr., 1879.
92. MARTIN: Treatment of Membranous Dysmenorrhea. Med. News, Phil., 1890, lxi., 471.
93. MASINI: Della dismen. in generale ed in partic. della dismen. membran. Salute, Geneva, 1881.
94. *MAYER: B. z. Geb. und Gyn., iv., 1. Cited by Ramina.
95. *MAYRHOFER: Pitha and Billroth Chirurgie, Bd. iv., 2. Liefg., 1882.
96. MEYER: Zur pathol. Anat. der Dysmen. membr. Arch. f. Gynäk., 1887, Bd. xxxi.
97. *MOERICKE: Cited by Coquard.
98. MONTROSE PALLAN: AMER. JOUR. OF OBSTET., 1876.
99. *MONTGOMERY: Cited by Lutaud. Also, Signs and Symptoms of Pregnancy, London, 1856.
100. *MORGAGNI: 48th lettre, De sedibus et causis morborum, 1724.
101. NAGEL: Harn- und Geschlechtsorgane, Bd. vii., t. ii., Abt. 1, p. 90.
102. *NÄGELE: Cited by Lutaud.
103. *NEFFTEL: Am. Supp. to Obstet. Jour., 1877.
104. *ODEBRECHT: Demonstrat. asser. Decid. menstrualis. Berlin Geburtsh. Gesellsch., 1885.
105. *OLDHAM: Membr. Dysmen. London Med. Gaz., new series, 1846, v.
106. ORMSBY: Med. Record, N. Y., 1881, xx., 597.
107. OWENS, MRS. B. A.: Membr. Dysmen. or False Mole. Microscope, Detroit, 1881-2, i., 7-11.
108. PACKER: Phil. Med. Times, 1885.
109. PAGGI: Contrib. à l'étude de la dysmen. membr., Arch. de Tocol., 1881; also, Ann. de Gynec., 1881, xv., 355.
110. *PAJOT: Ann. de Gynec., 1880.
111. PATON: A Case of Membr. Dysmen. N. Y. Polyclin., 1893, i., 137.
112. PURDY: N. Y. Med. Journal, 1882.
113. *PETIT, A.: Dict. des Sc. méd., Art. Dysmenorrhea.
114. *PORRO: Cited by Ramina.
115. *POZZI: Cited by Ramina.
116. PREUSCHEN: Dysmen. membr. Med. Verein f. Greifswald. Ref. in der Deutsch. med. Wochenschr., 1884.
117. *PUECH: Ann. de Gynec., 1876.
118. *RACIBORSKI: Traité de la menstruation, 1868.

119. RAMINA: Sulla dismen. membr. Riv. Venet. di Sc. med. Venezia, 1896, xxiv., 493.
120. RANKING: Membr. Dysmen. (Treatment), Edinb. Med. Jour., 1880-1, xxvi., 898; also, Tr. Edinb. Obstet. Soc., 1881, vi., 36.
121. REAMY: Membr. Dysmen., AMER. JOUR. OF OBSTET., 1893, xxviii., 99; also, Tr. Am. Gynec. Soc., Phil., 1893, xviii., 223.
- 121A. RIES: Jour. of Am. Med. Assoc., 1896, xxvi.
122. *ROBIN: Gaz. méd. de Paris, 1858.
123. *ROKITANSKY: Cited by Thomas and Mundé
124. *ROTHIE: Dysmen. membr. und drei monat Metroragie. Memorabilien, Heilbr., 1879, xxiv., 481.
125. *RUGE: Capitolo sull' anat. patolog. dell' endometrite cronica, p. 117 of Schröder's book on Mal. des Organes génitaux de la Femme, 1886.
126. SAULMANN: Berlin. klin. Wochenschr., 1871.
127. *SAVIOTTI: Beiträge zur Geburts. und Gynäk. von Scanzoni.
128. *SCANZONI: Chronische Metritis, Wien, 1863. Cited by Saviotti.
129. SHATTUCK: Membr. Dysmen. Boston Med. and Surg. Jour., 1883, cviii., 56.
130. *SCHRÖDER: Krankh. der weiblichen Geschlechtsorgane, 1884, x.
131. *SIEBOLD: J. f. Geburtsh., vii., 599. Cited by Lutaud.
132. SEMELAIGNE: Thèse de Paris, 1851.
133. SIMS: Cited by Coquard.
134. *SIMPSON: Edinb. Monthly Jour. of Med. Sc., 1846.
135. *SIMPSON: Edinb. Med. Jour., 1877.
136. *SIREDEY: Dict. de Méd. et Chir. Prat., Dysmen. Membran.; also, Dict. Encyclop., 1870; also, Ann. de Gynéc., 1875.
137. *SINÉTY, DE: Soc. de Biol., 1880.
138. SKENE: Membranous Dysmen., N. Y. Med. Jour., 1884; also, Am. Med. News, 1885, and N. Y. Med. Jour., vol. xlii., 1885.
139. *SOLOVIEF: Arch. f. Gynäk., 1885, Bd. ii., S. 10.
140. *SPENCER WELLS: Tr. of Am. Gyn. Soc., 1879.
141. SPRATLING: Membr. Dysmen. Charlotte, N. C., Med. Jour., 1895, vii., 555.
142. *STARK: Membr. Dysmen. Glasgow Med. Jour., 1888, xxix., 448.
143. STROINSKY: Membr. Dysmen. Chicago Med. Jour. and Examiner, 1882.
144. SOLVOW: Membran. Dysmen. successfully treated by Faradization. Med. Obozr. Mosk., 1884, xxi., 172.
145. *USSDORF: Eine neue Behandlung der Dysmen., 1877.
146. *SURER: Cited by Paggi.
147. *TARDIEU: Cited by Le Pileur (Grechen).
148. *TAULIER: Thèse de Paris, 1871.
149. *TILT: Arch. of Med., 1861, and Lancet, 1853.
150. *TROQUE: Thèse de Paris, 1869.
151. TYLER SMITH: The Lancet, 1855.
152. VEDELER: Arch. f. Gynäk., xx., 1883.
153. *VIKEL: Cited by Ramina.
154. *VIRCHOW: Cited by Lutaud. Also, Virchow's Archiv, Bd. lxxiii., S. 401.

155. *V. FRANQUE: Cited by Ramina.
156. VON KLEINWÄCHTER: Wien. Klinik, 1885.
157. *WALTON: Ann. Soc. méd. chir. de Liège, 1887, xxvi., 133.
158. *WEST: Cited by Coquard.
159. *WILLIAMS: Tr. Obstet. Soc. of London, xix., 1877.
160. *WILSON: Tr. Am. Gyn. Soc., 1877.
161. *WINCKEL: Cited by Ramina.
162. WINTER: Lehrbuch der Gynäk. Diagnostik, 1896.
163. WYDER: Arch. f. Gynäk., xiii., 44.
164. WYNN WILLIAMS: Dysm. Membr. Tr. Obstet. Soc. of London, 1883.
165. *ZIEGLER: Cited by Ramina.

THE TECHNIQUE OF OPERATIONS FOR INTRALIGAMENTARY TUMORS.

BY

WILLIAM H. WATHEN, A.M., M.D., LL.D.,

Professor of Obstetrics, Abdominal Surgery, and Gynecology in the Kentucky School of Medicine; Fellow of the American Gynecological Society; Gynecologist to the Kentucky School of Medicine Hospital and the Louisville City Hospital, etc., etc., Louisville, Ky.

THE approved technique in operations for the removal of cystic and myomatous tumors that arise in the broad ligaments, but ascend into the abdominal cavity and do not unfold the peritoneal layers or bury deep into the pelvic structures, is so universally successful in results that it would be a waste of time to consider the details. But the technique in the removal of intraligamentary or retroperitoneal tumors proper, which lie deep in the pelvis under and behind the peritoneum, sometimes ascending in the abdominal cavity and separating the meso-rectum, meso-colon, or mesentery of small intestine, so that the cyst wall or myomatous mass may sustain such intimate relations with the bladder, uterus, bowels, ureters, or blood vessels as to show nearly a continuity of structure, is as complicated as in any operation in surgery, and not always correctly appreciated. The complications and dangers, however, are measured by the extent and character of the connection with, or involvement of, adjacent vital structures or organs, the pathology of which must be studied in its histogenetic sense, that we may better appreciate the gross conditions and environments, a knowledge of which is essential in every successful surgeon who operates for the

removal of these tumors. The encapsulation of such tumors makes it necessary to remove them by enucleation, and sometimes the uterus also should be removed; hence we should adopt methods that will prevent injury to the bladder, ureters, intestines, or blood vessels; therefore, in separating the capsule, we dissect close to the tumor wall and carefully protect the peritoneal membrane, as its preservation may add greatly to the success of the operation.

There is seldom danger of wounding vital structures if we adopt means that will primarily control hemorrhage; and as the blood supply to the tumor and the capsule is mainly from the uterine and ovarian arteries, if these are ligated or clamped, before enucleation is begun, through the abdominal incision, there will be but little hemorrhage from other sources. As this cannot be accomplished in large tumors except by the combined vagino-abdominal method, it is better to begin the operation by ligating or clamping the uterine artery through a vaginal incision in the upper and lateral vaginal fornix, preferably at a point between the ureter and the internal iliac artery. for this will better control hemorrhage. If the tumors are bilateral the uterine arteries should be controlled *per vaginam* on each side; and if where we cannot complete the operation by the infrapubic route, the abdomen should be opened and the uterus and tumors removed, for hysterectomy is preferable in such cases.

Much valuable time may be saved and the details more carefully carried out if we control hemorrhage during enucleation by the application of forceps until the tumors have been removed, and then ligate bleeding points; by this means hemostasis is more perfect, for ligatures may be applied quickly and successfully after the removal of the tumor that could not have been so satisfactorily or securely used otherwise.

While the ureter may sometimes be displaced by the growth of the tumor, it can nearly always be sufficiently outlined during both the vaginal and abdominal part of the operation to prevent injury, and this may be positively accomplished by ureteral catheterization. The uterine artery is never materially displaced by the growth of the tumor, and can be located and controlled at some point between its origin and the uterus.

The location and the extent of the incision of the capsule must be determined by the local conditions surrounding the tumor, but a point must be selected that will enable us to

suture the capsule to the abdominal wound, were it to become necessary, which might be indicated where there is a large bleeding surface, or an infected area resulting from suppuration of a cystic tumor in contact with the muscularis of the bowel, or where there is a suspected weak point in the intestine that may rupture under the peritoneum where it was separated from the cyst or tumor wall. In cases where the union between the tumor and the capsule has been especially intimate and hard to separate, we often have extensive oozing, though the arteries have been carefully ligated. In these cases oozing can be controlled by tamponing the cavity and suturing the capsule in the lower part of the abdominal wound. If suppuration has infected the cavity, or if the injured intestine finally ruptures, allowing the escape of fecal matter and gas, this will all pass through the abdominal wound and the peritoneal cavity will be safely protected. I have had several cases of this character where the patient could not have recovered had I not sutured the unbroken capsule into the abdominal wound or drained the capsule cavity into the vagina.

It is recognized that relatively a great many intraligamentary cysts *suppurate*, and my experience indicates that the principal cause for this condition is the unfolding of the mesentery, so that the cyst wall comes in *direct contact* with the muscularis of the intestine, thereby permitting the *passage* of germs from the bowel into the cystic cavity. It has not been proved that germs can pass from the bowel through an uninjured and healthy peritoneal covering, and in cases where they have infected the peritoneum this structure has been injured by traumatism or disease. It is now estimated that from *twelve to fifteen billions* of the bacillus coli communis pass from the rectum daily; and were it possible for these germs to pass through a bowel with a healthy peritoneum, no one could live. In most cases where oozing is not a factor, and where there is no indication of danger of bowel rupture or sepsis, it is better, if possible, to ligate the capsule near its base; but if the cavity is too extensive to admit of this, then trim away superfluous tissues and suture the capsule; or, in cases where the capsule can be safely sutured, but there is danger of infection or bowel injury, general infection may be prevented by opening through the pouch of Douglas into the sac cavity and draining through a gum tube, and in some cases this may be a better method than suturing the capsule into the abdominal wound. In a large proportion of these tumors the operation

may be completed per vaginam, with or without the removal of the uterus. Where there are small cystic tumors upon one side, or even upon both sides of the uterus, deeply embedded in the folds of the broad ligament, they may be removed through an opening into the pouch of Douglas by incising the capsule and enucleating. The same method is sometimes adopted in myomatous tumors in this locality, but in both cystic and myomatous tumors that are not larger than a fetal head the operation may be completed per vaginam by performing a hysterectomy. I remove tumors by morcellation *much larger* than a fetal head, but this cannot be accomplished unless conditions are favorable; and in all operations for either cystic or solid tumors in which we begin by the vaginal method, we should have the patient prepared, and be prepared for abdominal section if conditions arise that cannot otherwise be controlled; in fact, in all operations per vaginam for removal of ovaries, tubes, uterus, or tumors, the surgeon should be *prepared* to open the abdomen immediately, if indicated, to meet conditions or accidents, or if the operation can be better completed by the suprapubic method.

While the operation for carcinoma uteri is not directly included under the title of this paper, I will briefly call attention to this subject, because there has been a decided difference of opinion as to the correct technique in performing hysterectomy in these cases.

Dr. Kelly and some other surgeons have insisted upon the *suprapubic* method, because the technique then admitted of the removal of *pelvic glands* with cancer infection, which could not be possible by the vaginal route. I have always opposed this operation as *unscientific* and *contraindicated*, because these glands are *seldom* involved at an operable stage of the disease and the patient may die without such involvement. When carcinoma extends beyond the uterus it first involves the lower part of the broad ligaments, the vagina, and the bladder, and it must be decided by a vaginal examination if the case is operable, and, if so, the operation should be performed per vaginam; for by this method it is possible to take away more infected tissue than by any other method, and with a lower immediate and subsequent mortality. I have insisted upon this technique for many years, always operating from below, but varying the details of technique so as to remove the *greatest amount* of tissue supposed to be involved by the disease.

I am pleased to see that Dr. Kelly has abandoned the ab-

dominal route and is an avowed advocate of this pathology and treatment in such cases, which I have insisted upon for several years; but he is in error in insisting that the upper part of the broad ligament should be first clamped and the body of the uterus removed. This cannot be adopted as the rule, but may do very well in some cases. We must not insist upon observing a *certain* technique, but, having adopted a general principle, observe details to meet the varied indications in each individual case. In fact, I have from an extensive experience learned that it is the exception and not the rule that this fixed technique is indicated.

I have selected a few cases to show the applied technique and results in some of the most difficult and dangerous operations of intraligamentary and retroperitoneal cysts and solid tumors.

CASE I.—Mrs. B., age 35, widow, but was never pregnant. For several years she had profuse menorrhagia and sometimes metrorrhagia, caused by uterine myoma, resulting in a condition similar to pernicious anemia. She had lost much flesh, was greatly prostrated, and her pulse was 140.

The tumor was three times the size of a fetal head, involved the entire body of the uterus, and was so firmly fixed that it was nearly immovable. It had opened the fold of the broad ligament, meso-rectum, and was behind and had separated the peritoneum from the pouch of Douglas. The bladder was attached to the uterus and tumor for nearly six inches, showing that the tumor arose below the junction of the neck and body of the uterus. Both uterine arteries were clamped, after the vagina and bladder had been separated high enough to admit of severing one and a half inches of the broad ligament in its attachment to the uterus.

The abdomen was then opened, the ovarian arteries clamped, and the capsule incised above the bladder and near the fundus. The capsule was so firmly and thoroughly attached to the tumor that enucleation was nearly impossible, but the myomata and uterus were removed *en masse* without annoying hemorrhage. All bleeding points were clamped, and no ligatures or sutures were applied until enucleation was completed.

The capsule could not be sutured and was allowed to fall into the pelvic cavity, which was loosely packed with gauze, the end of which was pulled into the vagina. She had no shock and made an uninterrupted recovery, leaving the hospital at the end of the third week, looking and feeling better than before the operation.

CASE II.—Mrs. G., age 22, mother of one child 1 year old. Came to the hospital with high fever and rapid pulse, and complained of severe pain and pressure in the pelvis. The uterus was fixed, and on each side there was a cystic tumor ascending to the umbilicus, being also immovable. The uterine arteries were clamped and a vaginal hysterectomy completed. The tumors were drained and enucleated, both being typical intraligamentary, the one on the left side holding nearly a quart of offensive pus, suppuration being relatively much more frequent than on the right side, because of the unfolding of the meso-rectum or colon. Her recovery was uninterrupted and she is a strong woman.

CASE III.—Mrs. S., age 30, widow with several children. Was referred to me for the removal of what was diagnosed intraligamentary myoma. When she was anesthetized it was decided that the tumor was cystic, but nearly as unyielding to touch as a myoma, and all the pelvic structures were matted together and immovable. A vaginal hysterectomy was performed and two pus tubes and a suppurating intraligamentary cyst on the left side, larger than a fetal head, were removed, the capsule being enucleated. The mesentery of the rectum and colon was unfolded, and the intestines were extensively adherent to the tubes and upper part of the tumor. No opening could be found in the intestines, and neither gas nor feces escaped, but within twenty-four hours fecal matter was pressing through the dressing. This continued, but caused no other trouble, and she recovered promptly, and when she left the hospital on the twenty-fifth day there was but little fecal discharge. Three months later she was well and strong and had gained thirty pounds in flesh.

CASE IV.—Mrs. S., age 60, widow, with one child aged 40 years. A cyst filled the pelvis and ascended in the abdomen to the diaphragm. It had existed for ten years and had been frequently tapped by another doctor. She was greatly prostrated, having just recovered from a four-weeks illness, being delirious and with high fever. A retroperitoneal tumor was not diagnosed until the abdomen was opened and the cyst examined. It had separated the peritoneum from the pouch of Douglas, had unfolded the mesentery of the rectum and sigmoid flexure, and ascended behind the peritoneum and under the intestines up to the kidneys. The uterus and broad ligaments were elevated above the pubes and formed the lower anterior boundary of the cyst.

The tumor was drained of three gallons of pus, suppuration

having recently occurred, which caused the fever and delirium by the absorption of the product of bacterial growth. The ovarian arteries were clamped, the capsule incised, and the tumor enucleated, having a raw surface that had been dissected from the cyst holding three gallons, but there was little hemorrhage or shock. The broad ligaments near the uterus were three-quarters of an inch thick, and as the depth of the capsule cavity from the fundus of the uterus to the vagina behind the cervix was over six inches, it was necessary to remove the body of the uterus and the broad ligaments so that the capsule might be correctly sutured into the lower angle of the abdominal incision. When the abdomen was closed the raw surface was entirely shut off from the peritoneum, and the cavity was loosely packed with gauze around a drainage tube.

While no opening could be found in any part of the intestine, I feared secondary rupture because of the extensive unfolding of the mesentery, with a septic cyst wall in direct contact with the muscularis of the bowel. On the seventh day fecal matter was passing through the tube, but otherwise she made a perfect recovery, and during the second month the gas and fecal matter ceased to pass. She now enjoys perfect health.

I could select many cases where I have operated per vaginam and removed the uterus and one or two intraligamentary cystic or solid tumors, or have removed large cystic or myomatous intraligamentary tumors by the combined vagino-abdominal method, but the technique in the reported cases will be sufficient.

628 FOURTH AVENUE.

PUERPERAL ECLAMPSIA:

STATISTICS OF COLUMBIA HOSPITAL.¹

BY

JOHN F. MORAN, M.D.,

Obstetrician to Columbia Hospital; Clinical Professor of Obstetrics,
Georgetown Medical College, etc., Washington, D. C.

IN 4,200 labors occurring in the Columbia Hospital, there were 48 cases of eclampsia; 12 mothers died—25 per cent; 49 children (twins once); 13 still-born (3 putrid); 41 complete histories showed 35 primiparæ—80 per cent; 28 patients admitted

¹ Read before the Washington Obstetrical and Gynecological Society January 19, 1900.

in labor; 38 cases were vertex presentation, 2 breech, and 1 face; the eclampsia occurred in 20 before labor, 13 during labor, and 8 after labor; the greatest number of convulsions in any one case recovering was 49, in fatal cases 35; in 27 cases the resources of art were used as follows: 1 extraction (breech case); 4 manual dilatation of the cervix; induction of labor, 1; forceps, 15; venesection, 6.

Physiology of pregnancy is a normal process, but when we consider the manifold changes that take place in the blood, various organs, and nervous system, we can readily appreciate that the organism works at a disadvantage at best and the utmost care must be observed to preserve the physiological equilibrium.

Bouchard has said "that man is constantly menaced by poisoning; he labors each instant for his own destruction, making incessant attempts at suicide; nevertheless this intoxication is not realized, for the organism has multiple resources to escape it."

Lever and Simpson first called attention to the etiological relation of albuminuria to eclampsia. They inferred that the toxemia resulted from retention of urea in the blood and was the essential cause of convulsions. This theory was supported by many eminent authorities, and became quite generally accepted. Subsequent investigation, however, has shown that albuminuria is quite frequently found unassociated with eclampsia. In fact, various authorities assert that at least 5 per cent of pregnant women, particularly primiparæ, have albuminuria at some time during pregnancy without any untoward symptoms. Further, it is well known that many uremics die without eclampsia, and, *vice versa*, many eclamptics succumb, and manifest little or none of the pathological signs found in uremia. Experimental investigation has also shown that urea, except in enormous doses, is innocuous. Being, however, the ultimate product of tissue metabolism, it is of value in determining any interference with assimilation.

The theory of mechanical pressure of the ureters, assigned by Halbertsma as an essential cause, is also insupportable clinically and anatomically. If this theory were tenable we should frequently find hydronephrosis post mortem, but such is not the case; ovarian fibroid and other growths of the uterus should frequently be associated with eclampsia; again, swelling of the leg and other evidences of venous obstruction occur more and more in succeeding pregnancies, whereas albuminuria and eclampsia are especially seen in primiparæ.

Since the advent of bacteriology numerous investigators have isolated various germs from the blood and urine of eclamptics. Some have confirmed these findings, but the majority have rejected them. The staphylococcus, pneumococcus, and colon bacillus cause lesions similar to those found in eclampsia, but thus far the germ theory has not been proved. In the light of recent advances in pathology and experimental investigation, the weight of evidence would seem to show that eclampsia is due to the retention of toxin or toxins elaborated on the part of the mother and the child, owing to failure in the process of elimination. Experiments show the urine of eclamptics to be feebly toxic, while the toxicity of the blood serum is greatly increased. The microscopical studies of the organs of eclamptics by Winkler have demonstrated that multiple emboli are a constant pathological feature.

According to Kaltenbach, "the prodromata—gastric and cerebral symptoms—the rapid occurrence of serious disturbances in the action of the brain, postmortem increase of temperature, the nature and frequency of nervous disorders that follow, and which find their analogy in the neuroses consequent upon typhus and diphtheria, probably caused by toxalbumins, are scarcely to be explained unless by the theory of blood poison. The nature as well as the extent of the lesions corresponds with this theory." The fact that 80 per cent of cases of eclampsia occur in primiparæ and seldom recur in subsequent pregnancies; further, that many of the multiparæ suffering with eclampsia have not experienced it in previous pregnancies, supports this theory, and also seems to show that one attack confers immunity to a greater or less degree.

The kidney is the channel of escape, and so long as the renal functions are intact the toxin can and usually does escape without harm. While the nature and origin of the toxin is not known, the liver is usually at fault. The toxin may be absorbed directly from the bowels, but the liver performs the function of neutralizing the toxins which find their way into the circulation. If for any reason the liver is unable to deal with the toxins turned into the blood, the excess will fall directly upon the kidney, and probably will injure its finer structures and perhaps inflict serious and permanent damage to the kidney itself.

The preventive treatment consists of hygienic, medical, and obstetrical measures. Good pulmonary ventilation, nourishing and easily digested food, frequent bathing, moderate exer-

cise in the open air, proper clothing, the avoidance of fatigue and exposure to cold, are the principal hygienic measures to be observed. The frequency of eclampsia could be greatly diminished if more careful supervision of the pregnant woman was exercised. The perfunctory examinations of the urine for albumin during the latter weeks of pregnancy are not sufficient. It is true that in a majority of cases the danger signal is through renal insufficiency, but it must be remembered, although albumin may be absent, the amount of urea eliminated may be far below normal. Therefore a thorough analysis of urine, total quantity in twenty-four hours, specific gravity, quantitative estimation of urea, and microscopical examination of the sediment should be made from time to time. If the amount of urine be 40 to 50 ounces, with specific gravity 1.016 to 1.020, urea above $1\frac{1}{2}$ per cent, there need be little apprehension. It should be borne in mind, however, that many pregnant women excrete less than $1\frac{1}{2}$ per cent of urea without any apparent ill effect. In every case, therefore, the constitutional signs and symptoms should be closely scrutinized. When intoxication exists, as manifested by slight digestive disturbance, headache, etc., the regulation of the bowels and restriction of the diet will usually suffice. Persistent headache, vertigo, uncontrollable vomiting, disturbance of vision, insomnia, neuralgias showing involvement of the nervous system, will call for more vigorous and active measures. Free purgation, hot baths, absolute milk diet, and rest in bed should be enjoined. Diuretics are of secondary importance and of little use until the bowels and skin have been freely acted upon.

The medical treatment will vary according to the exigencies of the case. If there be pre-existing cardiac disease or chronic nephritis, remedies appropriate for these diseases should be used. In the former digitalis, strophanthus, strychnia, and other heart tonics are serviceable, while in the latter nitroglycerin is of inestimable value. In the acute nephritis of toxemia our chief reliance should be upon free catharsis and diaphoresis. Mercurials followed by salines, hot-air or plunge baths followed by envelopment in blankets, subcutaneous or rectal injection of normal salt solution frequently repeated, citrates of caffeine and lithia, and abundance of water, are the measures that have proved very successful in our hands. If, in spite of vigorous treatment, the volume of urine is not increased and the excretion of urea remains stationary or diminishes, together with the persistence of menacing constitu-

tional symptoms, it will be necessary, particularly if the fetus is viable, to terminate the pregnancy. As a rule, if the eclamptic attack occurs during pregnancy, particularly during the latter weeks, it generally excites uterine contraction and precipitates labor. In a majority of cases the fetus dies before delivery. In some cases, however, uterine action does not bring on labor, but the child succumbs *in utero*. In this event the eclampsia usually ceases, albumin decreases or disappears from the urine, and pregnancy continues for a time or even to term. However, the fetus in a few cases lives, and, under judicious treatment, pregnancy continues. In this connection I report the following case: M. D., age 20, married, primipara. About six months gestation. Admitted to the hospital January 28, 1896, with history of repeated convulsions; on admission semi comatose, muttering delirium, vomiting and involuntary stool, very violent. Urinalysis: urine scanty and albumin abundant. Treatment: plunge bath 104° to 107° for twelve minutes immediately after admission; veratrum viride, five minims, hypodermatically every two hours during the first day; bowels freely purged with compound jalap powder. About forty eight hours after admission the patient was much brighter and able to retain nourishment. Subsequent treatment consisted of absolute milk diet, tonics, salines, and diuretics. Two months after admission labor set in and was natural and easy. At the time of leaving the hospital there was still a trace of albumin in the urine.

The therapeusis of eclampsia, like that of the prophylaxis, will comprise the threefold indication of elimination: purgatives, diuretics, and diaphoretics; and, in addition, sedation by means of anesthetics, narcotics, venesection, and emptying the uterus. Croton oil and elaterium are preferable during the attack, because of ease of administration and rapidity of action. When the patient is able to swallow, the saturated solution of magnesium sulphate should be given to further eliminate the poison by the bowels. The subcutaneous injection of normal salt solution is a rational measure: it permeates every tissue, diluting the toxin, and favors elimination by the skin and kidneys.

Chloroform is the remedy *par excellence* to control the convulsions. When first introduced it was regarded as a specific, and is to-day by many so considered. Some favor continuous narcosis, while others prefer to use it intermittently to control the seizures. Morphia relieves the spasm and reflex irrita-

bility. It is a nerve sedative and diminishes salivary and bronchial secretion. It has little effect upon the heart and kidneys, except perhaps in chronic nephritis. Veit has obtained the lowest mortality, 3.3 per cent in 60 cases. He begins with half a grain and gives two to three grains in twenty-four hours. Chloral, alone or in combination with bromides, has many warm advocates. Charpentier prefers it to all other remedies, and reports 114 cases with a death rate of 3.5 per cent. Winkler saved 85 out of 92 cases. It should be given in large doses, preferably by enema, and should be administered in milk, as watery solution is apt to produce rectal tenesmus. Pilocarpine, being a cardiac depressant and favoring edema of the lungs, one of the dangers of eclamptic poisons, should not be used. *Veratrum viride* is extensively employed, particularly in the United States. It is a remedy of undoubted value, but, as it relieves arterial tension by depressing the heart, it should be carefully watched. Jewett says experience has shown that no convulsion will occur if the system is sufficiently under the influence of the drug to hold the pulse under 60 per minute. He reports 22 cases and 6 deaths. H. R. Costen reports 7 cases—5 ante- and 2 post-partal; 6 of the mothers were primiparæ; all patients recovered, and all children were born alive, but one died a few hours after birth.

The evidence of the good effect of venesection is still contradictory. On the one side we find able and competent observers claiming great success from its use, while equally able obstetricians have obtained as good results without resorting to blood-letting. In Guy's Charity, during the days of venesection, in 50 cases the mortality was 30 per cent; since venesection has been discontinued the mortality in 34 cases has only been 20.5 per cent. Our personal experience has not been sufficient to justify any positive conclusion. In cases, however, where there was high arterial tension, cyanosis, and threatened edema of the lungs, the abstraction of a pint of blood gave marked amelioration of the symptoms. But its good effect seemed to be transitory, the convulsions recurring after a period of time with greater frequency. More recently bleeding and simultaneous transfusion of salt solution is meeting with much favor, but it has not been sufficiently tried to form any just estimate of its value.

As to the obstetrical management, much will depend upon the judgment and skill of the operator. When labor appears spontaneously during eclampsia it is advisable to accelerate

delivery as soon as possible. When eclampsia sets in before labor there is much difference of opinion as to the best method of procedure. Dührssen considers the induction of premature labor, or even abortion or forced delivery, the only treatment. He incises the cervix deeply, and, if necessary, the vulva and perineum. Bossi uses instrumental, others manual, dilatation; others again would perform Cesarean section. Charpentier is convinced that induction of labor is useless, and forced delivery dangerous.

The Cesarean section performed after the death of the mother has in a very few instances saved the life of the child. The operation *ante mortem*, first proposed by Halbertsma and performed fourteen times by himself and others, gave a mortality of 36 per cent.

Charpentier, Solé, Lanois, and Meslier have reported cases treated with serum, but serum therapy is a problem of the future.

In conclusion, I desire to state that no one line of treatment has been pursued in the Hospital. In addition to the eliminative treatment, chloral and morphine have been most frequently used. During the past six years *veratrum viride* has been given in a number of cases, but it was not pushed to the limit recommended by some authorities. As regards the obstetrical management, it has been customary when the cervix was yielding, and medicinal measures failing to control the convulsions, to accelerate delivery with forceps.

From the foregoing evidence it would seem that the most rational and efficacious treatment of eclampsia lies in prophylaxis. When we contrast the great mortality to both mother and child, under all forms of treatment for convulsions, with the excellent results obtained from judicious management of impending eclampsia, we forcibly realize the truth of this statement.

I desire to express my thanks to Drs. D. Webster Prentiss, Jr., and C. S. White, of the resident staff, for their valuable assistance in preparing the statistical report.

2426 PENNSYLVANIA AVENUE, N. W.

COMPRESSION OF THE URETERS BY MYOMATA UTERI.

BY

J. H. MASON KNOX, JR., PH.D., M.D.,
The Johns Hopkins Hospital.
(Service of Dr. Kelly.)

(With two illustrations.)

THE ureters, as organs with definite functions, have only of late years been given their proper prominence among the important structures of the body. Any interference with the conduction of urine from the kidneys and the bladder is at once attended with consequences trivial or grave, dependent upon the duration and nature of the obstruction. Hence it is that outside pressure upon the ureters, due to conditions comparatively innocent in themselves, may injure the health and speedily destroy the life of an individual. The conditions which may give rise to ureteral compression are numerous and varied. They may be briefly outlined as follows:

1. Neoplasms, benign and malignant, situated along the course of the ureters, most frequently in association with one of the pelvic organs.

2. Inflammatory conditions of many varieties may lead to the production of an abscess or adhesions which, either of themselves or by fixing a normal organ or a tumor, may occlude the ureter.

3. Pressure from without may also be exerted upon the ureters by other much more unusual causes. Thus, cases have been reported where this has been produced by a wandering spleen, prolapsus of the uterus or kidney, a gumma, an aneurism, a hydatid cyst, etc.

The most common cause of ureteral constriction is unquestionably carcinoma of the uterus. The large proportion of these cases, unless there is prompt extirpation of the growth, result fatally because of the ureteral involvement followed by retention of urine and uremia. Of the tumors which occlude the ureters, not by invading their walls, but mechanically, by pressure from without, the myomatous tumors of the uterus deserve especial attention. It is remarkable, considering how

common growths of this nature are, that so few cases of uterine myomata which press upon the ureters have appeared in the literature. This may be due to several causes. In the first place, the uterus is normally in a state of "mobile equilibrium," and growths in its walls, unless of considerable size, are apt also to be moved by the act of respiration, by a change of the patient's position, in fact by any cause which alters the abdominal pressure, and so they fail to press constantly at any one point. Again, the ureters along most of their course lie on each side of a projecting bony shelf, the vertebral column, which affords great protection against large globular tumors.

But doubtless the scarcity of cases of hydroureter due to myomata reported is in large part to be explained by the fact that this complication has been quite overlooked at the time of operation. Thus, in more than four hundred cases of myomata uteri admitted to The Johns Hopkins Hospital during the last ten years, in only three was the existence of dilatation of the ureters noted in the description of the operation; while recently, since our attention has been especially directed to the condition of the ureters, hydroureter, often only of slight grade, has been discovered in a considerable proportion of the cases in which the myomatous mass was as large as a fetal head.

The same systematic examination of the ureters at the time of operation for pelvic inflammatory disease or for other causes has disclosed a dilatation of one or both of these tubes in several instances in which it was quite unexpected.

The nature of a myoma of the uterus renders it most likely of all tumors to mechanically compress the ureters. In pregnancy, although the uterus is large, it is not so firm, surrounds a sac containing fluid, and so does not exert upon the ureters more than moderate pressure. Solid tumors of the ovary or tube are not common. When of large size they may compress the ureters, but often avoid them by their more lateral situation where they are supported by the pelvic wall. Cystic tumors of tube or ovary, globular in form, present a yielding surface to the ureters and rarely are the cause of their occlusion.

Myomata are particularly likely to obstruct the ureters under two conditions:

First, when the tumor is locked in the bony pelvis and in growing exerts more and more pressure against the bony walls. Myomata of this nature are apt to be associated with a retroflexed uterus.

Secondly, the ureters are easily compressed by uterine

tumors which are large enough to distend the abdomen and receive the impact of the abdominal walls, forcing them back on the lower dorsal vertebrae or the pelvic brim. The effect of this pressure is often seen in the form assumed by large myomata, which appear to have "flowed out" of the pelvis and to be then pressed against the vertebral column above (see Fig. 1). Such a tumor shows on its posterior surface an exact mould of the broad spinal ridge. The pressure of the linea alba may produce a deep sulcus in the anterior surface of a large myoma.¹

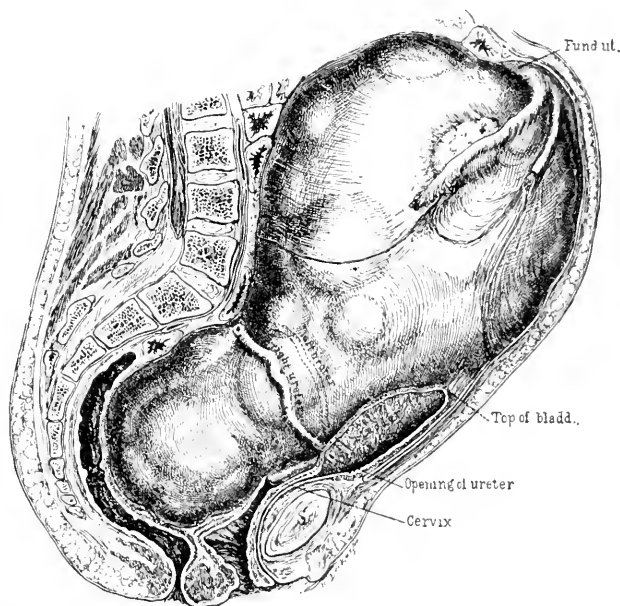


FIG. 1.—Myomatous uterus moulded by pelvis and abdominal wall. (After H. A. Kelly.)

Even in these extreme cases the ureters, protected by the bony protruding shelf already referred to, often escape injury.

The important features of the cases of myomata uteri which compress one or both ureters, for the sake of brevity and convenience are enumerated in a table appended to this paper.² Several degrees of ureteral involvement may be recognized, and about them will the cases cited both in text and table be grouped.

¹ Southern Surg. and Gyn. Transactions, 1892, vol. v., p. 215.

² The table will appear with the second instalment of the paper in a succeeding number of the JOURNAL.

GROUP A. MODERATE URETERAL INVOLVEMENT.—Those cases in which there is but slight pressure exerted by the tumor upon the ureter. Frequently the resulting hydroureter is not suspected, but is discovered first at operation, in some instances only after special search. In most of the cases in this category there has been noticed an increased frequency of micturition, which was properly referred by the clinician to its more probable cause—namely, pressure upon the bladder. This group of cases is undoubtedly larger than any other, but in the majority of instances the ureteral affection has escaped notice or has produced little or no discomfort to the patient, and the condition has not been reported. It is important, however, to recognize this early affection of the ureters in many cases of myoma uteri, as it may be but the initial step in a serious or fatal complication. The following cases belong to the category of slight ureteral involvement.¹

CASE I.—M. R., married, age 50, noticed six years previously that her abdomen began to swell, gradually at first, but rapidly during the last year. She lost in flesh and suffered with incontinence and increased frequency of micturition. There had been a profuse menstrual flow for the past six or seven years.

Examination.—The abdomen was filled with a hard, nodular mass. The pelvis was choked by the tumor. Maximum abdominal girth was 115 centimetres.

Operation.—Hysteromyomectomy. There was found an extensive subperitoneal myoma. The fundus uteri was seated on top of the mass near the ribs. Both ureters, sigmoid, and bladder were lifted high into the abdomen. *There was a large right hydroureter.* Result: well.

CASE II.—M. F., single, age 53. Four years before admission her abdomen began gradually to become larger. The menstrual flow had been more profuse and irregular for several months. There was slight increased frequency of micturition, and she had suffered from abdominal pain and backache.

Examination.—Arising out of the pelvis and reaching almost to umbilicus was a hard, irregular mass with a softer nodule in the left flank. The urine was negative.

Operation.—Hysteromyomectomy. A very vascular myoma the size of a six and a half months pregnancy was removed. *A dilatation of the right ureter was noted.* Result: well.

¹ For complete reference to cases cited, see bibliography in second installment of the paper.

CASE III.—J. H., married, age 41, complained of an abdominal tumor which appeared twelve years before and has grown steadily ever since, with some pain at first, but little of late. For eight years she had had uterine hemorrhages at intervals of from two to twelve months. The menstrual flow had been profuse for three years until one year ago, when it ceased. The bowels were constipated and there was some difficulty in micturition. The urine was negative.

Examination.—The abdominal cavity was filled with a hard, resisting mass extending to within four and a half centimetres of the ensiform cartilage. The tumor was mostly extrapelvic.

Operation.—Hysteromyomectomy. *Both ureters were found elevated high out of the pelvis and dilated. Result: well.*

CASE IV.—M. B., married, age 43. Three years ago she first noticed that the abdomen was becoming larger. There was difficulty in urinating and increased frequency. Nothing abnormal was found in the urine. General health was good. The menstrual discharge was rather profuse.

Examination.—A large, firm tumor mass was found in the abdomen, extending to the umbilicus.

Operation.—Hysteromyomectomy, after bisection of the uterus (see Treatment¹). *The bladder and the ureters were raised up by the growth, and the right ureter found moderately dilated.*

CASE V.—M. K., single, age 33. For three years she had noticed a hard mass in the right abdomen near the umbilicus. For seven years there had been some pain and marked frequency of micturition. The menses were regular, but the flow was profuse. The general health was good. The urine was negative.

Operation.—Hysteromyomectomy, using the same method as in Case 4. The tumor was wedged in the pelvis and held by dense adhesions. *Both ureters were found to be pressed upon at the pelvic brim. The right ureter had a diameter of 13 millimetres, the left of 7 millimetres.*

CASE VI.—J. S., widow, age 35. Four years before, first noticed a "knot" in the abdomen, which steadily increased in size. For six months the menstrual flow, previously regular, occurred twice a month, with hemorrhage during the last two periods.

¹ Will be printed with the next instalment of the paper.

Examination.—The abdomen was found to be moderately distended by a hard mass, more prominent on the right side and reaching as high as the umbilicus. The patient was in a precarious condition, and operation was delayed hoping that she might gain strength, but she continued to lose ground and it was impossible to save her without operative treatment.

Operation.—On opening the abdomen pus welled up from the pelvis. A myomatous uterus with adhesions to omentum and many pelvic adhesions, many loculi of pus, together with four large subperitoneal myomata, one calcareous, was met with. The patient sank under operation and died before the abdomen could be closed. On autopsy two of the nodules in the fundus of the uterus were found to have undergone necrosis, thus accounting for the peritonitis. There was a double ureter and double pelvis of the kidney on the right side. *The ureters on both sides are dilated, hydroureter, above the point of pressure by the tumor.*

CASE VII.—Fabricius mentions briefly the case of a woman, age 43, who was operated upon by Chrobak. A large myoma the size of a head was found growing from the posterior wall of the uterus and extending to the navel. Behind the cervix was a second mass which filled the cul-de-sac, pressing the cervix against the symphysis. *Into and through this tumor the left ureter crossed directly for a distance of nine centimetres, being sharply bent in the mass. Above the point of entry the ureter was somewhat dilated.* No symptoms are given.

The following case belongs in this group, though it is particularly important as being the first instance of successful uretero-ureteral anastomosis in man.

CASE VIII.—A woman, age 25 years, presented herself to Dr. H. A. Kelly for examination, with her whole lower abdomen filled with a mass about the size of a large fetus at term. The tumor choked the pelvis and extended above the umbilicus. The urine contained some albumin, but was otherwise negative.

Operation.—Hysteromyomectomy. The uterus represented three myomatous masses, each twelve to eighteen centimetres in diameter. After tying off the round ligaments and ovarian vessels preparatory to the enucleation, a large, flat vessel 1 centimetre broad was exposed for about 7 centimetres of its length on the anterior surface of the lower pelvic mass. It closely resembled an engorged vein, for which it was

taken, ligatured in two places, and cut. The error was at once apparent. *The divided structure was the right ureter, enlarged to four times its normal circumference as the result of pressure by the myoma.* After completing the hysteromyomectomy in the usual manner, the cut ends of the ureters were united by suture. The patient made an uneventful recovery.

GROUP B. PRONOUNCED URETERAL PRESSURE.—The cases thus far quoted have differed from each other in the condition of the patient before operation and in symptomatology, but all were alike in the fact that the pressure upon one or both ureters was of slight grade, gave rise to no distinctive symptoms, did not alter the course of the affection, and was discovered first at the operating or autopsy table. The following cases are instanced as representing a more pronounced grade of pressure upon the ureter. The patients complained of definite symptoms indicating an interference with the passing of urine.

CASE IX.—Thus, Ruhl reports the case of a woman, age 45 years, who for two years had suffered from backache and abdominal pain radiating to the region of the right kidney. She was not able to bend over. The menses had always been painful and irregular. Micturition was attended with much discomfort and marked tenesmus. After hot applications over the lower abdomen, large quantities of urine were passed. The bladder and urethra were normal. Examination showed a large, hard tumor with four pedunculated masses, one of which was calcareous, connected with the uterus and filling the pelvis.

Operation.—Hysteromyomectomy. *The right ureter was found to pass directly through the large tumor mass anterior to the uterus for a distance of seven centimetres.* It was carefully dissected out and the patient made a good recovery.

While the two succeeding cases belong to that class in which the presence of the tumor produced definite obstructive symptoms, the exact point of pressure was not determined. It is probable, however, that the lower ends of the ureters and the base of the bladder were most affected. The cases are of particular interest because of the method of treatment pursued.

CASE X.—Pepper reported in 1868 the case of a stout woman, age 50, who had suffered for eighteen months from prolapsus uteri which was growing gradually worse. She

noticed that the lower abdomen was becoming hard to the touch. She complained later of retention of urine. The urine only dribbled from her when she reclined. There was obstinate constipation. She lost rapidly in strength and weight. On examination the uterus was found to be enlarged, in marked retroflexion, and with a nodular, hard mass on its posterior surface.

Treatment.—Under anesthesia, with the patient in knee-breast position, by the application of much force after the use of the colpeurynter in both vagina and rectum, the tumor was forced by the examining hand from the pelvis into the abdomen, where it felt as large as a fetal head and came to the level of the umbilicus. The mass showed no tendency to return to the pelvis. The pressure symptoms subsided and the patient was able to go to work.

CASE XI.—Hue reports a similar case. A woman, married, age 47 years, had enjoyed fairly good health for years, except for some frequency of micturition and persistent constipation, relieved only by drastic drugs. Later the urinary trouble had greatly increased. She was obliged to void every few minutes when on her feet, but could pass but a few drops at a time. The urine was clear, contained some albumin, otherwise was negative.

Bimanual examination revealed a firm, round tumor connected with the uterus and filling the pelvis from symphysis to sacrum. The cervix lay behind and below. The tumor reached to within three fingers of the umbilicus and resembled in size a pregnancy of five months. It was not adherent.

Treatment.—By placing two fingers in the rectum and two in the vagina, aided by an outside hand, the tumor was gradually worked out of the pelvis into the abdominal cavity. The symptoms since almost disappeared, and no tendency to return was noted.

CASE XII.—The following case, reported by Tuffier, illustrates well the serious effects which follow the more extreme grades of ureteral compression. A woman, married, age 48 years, had been operated on for fibroma two years previously. Several months afterward her abdomen began to swell, but there was no discomfort or untoward symptoms until fifteen days before admission to the hospital, when micturition became difficult, a few drops only of urine resulting after long straining. Complete anuria ensued for four days before admission. There was most obstinate constipation. The menstrual history

was normal; she had had six normal pregnancies. On admission she presented the symptoms of grave uremia, with headache, respiratory anxiety, and vomiting. The bladder was empty.

Examination showed a firm, nodular tumor, the size of a full-term pregnancy, filling the pelvis and extending three fingers above the umbilicus. A diagnosis of fibroma compressing the ureters and rectum was made.

Treatment.—The writer considered two courses: 1. To open the ureters or kidney above the point of pressure; this would not relieve the constipation. 2. Hysteromyomectomy. The latter was decided upon. A tumor, as large as an adult's head, and two smaller masses were removed, the pedicle being left because of dense adhesions. Vaginal examination directly after the operation showed the pressure to be removed. The next day the patient voided 1,100 grammes of urine, and finally made a perfect recovery. In this instance there can be no doubt of the truth of the diagnosis and that the removal of the constricting mass saved the patient's life.

CASE XIII.—In the following case, reported by Rochet, the successful removal of the constricting mass was followed by anuria, probably because the small amount of renal substance remaining was thrown out of function by the shock of the operation. A woman, age 40 years, presented herself complaining of symptoms indicating pressure upon the bladder and rectum. The urine was negative. Examination showed a large, firm tumor the size of a child's head in the small pelvis, springing from the posterior surface of the uterus. On operation the mass was found to be a subperitoneal pedunculated growth firmly wedged in the pelvis, adherent to both rectum and bladder. It was raised with difficulty out of the pelvis, after which the enucleation was simple, the pedicle being divided behind the uterus. The day after the operation the patient became restless, had a constant desire to urinate, but the bladder remained empty. Dyspnea and Cheyne-Stokes breathing ensued, with rise of temperature and pulse rate, ending in death on the evening of the second day.

On autopsy the organs, with the exception of the kidneys, were found to be normal. The left kidney was enlarged. There was *marked dilatation of the calices and pelvis*, but no pus. The renal substance was much atrophied. *The left ureter was markedly dilated.* The right kidney was absent and replaced by a small nodule, the size of an almond, in a fatty

capsule. The corresponding ureter was filiform, but patulous throughout its entire length. The previous history of the patient is not given, and it is not stated whether the disappearance of the right kidney was a congenital affection or resulted from the contraction of the walls of a hydronephrotic sac, as in Case 14.

GROUP C. MECHANICAL DESTRUCTION OF RENAL SUBSTANCE.—The gradual obstruction of a ureter may result in the complete destruction of the corresponding kidney. The various steps in the process have been carefully described and need not be discussed here. As the fluid retained in the renal pelvis increases in amount the kidney substance undergoes a pressure atrophy, beginning with the pyramids and extending finally to the cortex, though even in cases of extreme hydronephrosis there is usually some cortical substance remaining. In many cases, when the parenchymatous material has nearly disappeared, there begins a gradual absorption of the fluid, now largely serum. The cyst walls shrink and the whole mass becomes converted into a fibrous sac. Such a transition has taken place in the succeeding case, reported by Peyrot, cited by Milliot.

CASE XIV.—A woman, age 42 years, who had been treated by vaginal puncture for a cyst of the uterus and much relieved, returned in great abdominal pain. The menstrual flow was excessive. There were no urinary symptoms. A smooth, hard tumor, resembling a six months pregnant uterus, was made out on examination.

Treatment.—A fluctuating projection of the tumor was punctured per vaginam. The patient bled continuously following the puncture. She had some rise of temperature, a chill, nausea, and died on the sixth day.

On autopsy a cystic myoma of the uterus was found reaching to the level of the umbilicus and filling the pelvis. *The right ureter was occluded at the pelvic brim, above which point it was greatly dilated. The right kidney was reduced to a fibrous sac.* The left ureter was less dilated and its kidney the seat of parenchymatous degeneration.

GROUP D. URETERAL PRESSURE WITH INFLAMMATION.—Passing from the instances in which the effects of the ureteral pressure have been trifling (Group A), or, though more serious, have been attributable to the mechanical interference with the passage of urine (Groups B and C), we come now to consider a third group of cases, namely, those in

which an inflammatory condition of the urinary apparatus has ensued above the point of ureteral pressure. This is a condition most to be feared as a sequence of an obstruction of the ureter. When there is thus produced a damming-back of the urine in the ureter, renal pelvis, and kidney tubules, the resistance of these structures against infection is lowered; in fact, the urine itself proves a source of irritation, and hydro-ureter and hydronephrosis are not infrequently followed by a nephritis, a pyoureter, and a pyelonephrosis or surgical kidney. The frequency of such a condition of the upper urinary tract in cases of ureteral obstruction is attested by the fact that of the twenty-five cases collected, of pressure upon the ureters produced by myomatous tumors, infection of the ureter or kidney followed in twelve instances. This does not represent, of course, the true numerical relationship between the inflammatory and the non-inflammatory cases, as has been pointed out—but a small percentage of the latter are diagnosed, and so do not appear in the literature—but it does indicate the danger there may be of a renal complication following even a slight mechanical obstruction of the ureters. It may be well to subdivide this group into several sections, according to the nature of the renal or ureteral involvement.

(a) *Chronic Nephritis*.—First are to be mentioned the cases in which a chronic nephritis has been associated with the ureteral obstruction. It is difficult to prove that the nephritis is actually produced by the obstruction, but certain it is that the interference with the excretion of the urine hinders the normal function of the kidney and renders it more liable to the assaults of any of the agencies recognized as of etiological significance in nephritis.

CASE XV.—A. S., single, age 40, presented herself for treatment, complaining of an abdominal tumor. She had been losing in weight for seven years. The growth of the tumor, which had been noticed five years before, gradual at first, had during the last three months become rapid. The menstrual flow had increased in amount. There were no hemorrhages. Her previous health had been excellent.

On examination the pelvis and part of the abdomen were found to be occupied by a hard, globular tumor densely adherent. The general condition of the patient was not encouraging. There was well-marked arterial sclerosis, evidence of a mitral insufficiency and a dilated heart. Nausea and vomiting and edema of the eyes had occurred at times. The urine was

of low specific gravity, clear, contained hyaline casts and a small quantity of albumin.

Treatment.—Hysteromyomectomy, double salpingo-oöphorectomy. The removal of the growth was imperatively indicated. This was accomplished after the method of bisection of the uterus, discussed under Treatment. The tumor was found to spring from the cervical portion of the uterus. The fundus rested like a cap upon the growth and reached the level of the umbilicus. *The ureters were represented by large, flattened cords ten to twelve millimetres in diameter.* The right one was displaced well to the right. In two days after operation the specific gravity of the urine increased from 1.006 to 1.008. It contained less albumin and fewer casts than before operation. The patient made an uninterrupted recovery. In this case the renal involvement was probably directly dependent upon the ureteral compression.

CASE XVI.—The following instance, which was reported by Murphy in 1849, represents a further stage of the same condition:

A woman applied to the author with her pelvis almost filled by a firm tumor. Micturition was impossible except by the aid of a catheter. After a few days he was called to her and passed a gum elastic catheter, but obtained no urine, although she was suffering from symptoms of retention of urine. She rapidly sank and died. On opening the abdomen a large tumor was found which had displaced the intestines and reached upward to the umbilicus and laterally to the iliac fossa. *The bladder was contracted and empty, but the ureters, being compressed by the tumor, were enormously distended and tortuous.* The kidneys were enlarged and in an advanced state of Bright's disease. The tumor proved to be fibrous, involving the whole posterior wall of the uterus.

(b) In the following case, reported by Berthod, the chronic nephritis was latent and associated with congenital cystic kidneys.

CASE XVII.—M. K., married, age 38, had suffered for many years from uterine hemorrhage. At the time of examination she was blanched and weak. A large, firm tumor connected with the uterus occupied the pelvis and much of the abdomen. There was no history of interference with the urine, which was negative repeatedly on examination.

Operation.—The uterus with the tumor was easily removed. Ligatures were brought out at the lower angle of the wound.

After the operation the patient passed no urine. The bladder remained empty.

On autopsy both kidneys were found to be "contracted" and to contain multiple cysts from a pea to a pigeon egg in size. *The right ureter was dilated to a diameter of 1 centimetre.* There was a general peritonitis. Although the cause of death in this case cannot be directly attributed to the ureteral compression, it suggests that the results of damming-back of the urine may be fatal when the kidneys are already extensively diseased. Compare in this connection Case 13.

(c) *Pyogenic Infection*.—In the following cases infection of the upper urinary tract by pyogenic organism has followed the ureteral pressure. An infection of this nature is usually an ascending one, which begins in the bladder and travels up the ureters, dilated and thrown partially out of function by the accumulation of fluid.

CASE XVIII.—Cabot reports the case of a woman, 70 years of age, who had had for a number of years a moderately large "fibroid" of the uterus. Rather suddenly she complained of frequency of micturition. Pus appeared in the urine. Retention of urine followed, and she died from anuria with symptoms of uremia.

On autopsy a calcified myoma weighing four and a half pounds was found in the anterior wall of the uterus, which was densely adherent in the pelvis to bladder and rectum. The ureters were pressed upon by the tumor at the pelvic brim. The walls were congested and thickened and contained pus. The kidneys were large and their pelves dilated. The onset of symptoms, Cabot thought, was occasioned by the settling of the hard tumor in the pelvis.

CASE XIX.—The same writer also reports a case in which the infection following pressure upon the ureters and bladder reached the renal pelvis. A woman, age 25 years, had known that she had an abdominal tumor for two years, but only during the last six months had there developed attacks of abdominal and pelvic pain, frequent micturition, and pyuria with occasional hematuria.

On examination a firm tumor, the size of a child's head, was found lying in the abdominal cavity, projecting deep into the pelvis and forcing the fundus uteri against the symphysis. A second tumor, as large as an orange, was adherent behind. At the first operation the smaller mass—an ovarian cyst—was removed. Pus continued in the urine at intervals, and the diagnosis of chronic pyelitis from pressure was made. When

the condition of the patient permitted, the large growth, a densely adherent "fibroid" of the uterus, was extirpated with much difficulty, after which the patient made an uninterrupted recovery.

(d) *Pyogenic Infection Severe*.—The further extension of the infection from the ureter and renal pelvis to the substance of the kidney is illustrated by the following cases:

CASE XX.—J. J., single, age 38, negress. The patient gave no definite history, except that she had noticed an abdominal growth four years before. On admission to the hospital she was in a state of marked hebetude.

On examination the abdomen was seen to be distended by a well-defined, firm tumor. The growth was entirely out of the pelvis. The urine contained a trace of albumin and a few hyaline casts. Catheterization was necessary. She gradually became weaker, could not be aroused, and died without operation four weeks after admission.

Autopsy revealed a large myoma of the uterus with central necrosis. The abdominal and thoracic viscera were displaced. *The ureters were tightly adherent to the posterior surface of the tumor and dilated from pressure.* There was well-marked pyelonephrosis. Both kidneys were filled with purulent foci.

CASE XXI.—M. C., age 45 years, married, complained of an abdominal tumor and oppression and heaviness therefrom. There was increased frequency of micturition. The bowels were constipated. The abdomen was found on examination to be symmetrically distended by a large tumor bulging out in both flanks.

Operation.—On opening the abdomen a densely adherent unilocular cyst was encountered, from which 19 litres of thin yellow fluid were evacuated. The ovarian and uterine vessels were ligated. The patient did well at first, but died suddenly on the eighth day.

The postmortem examination showed the mass to be a fibrocystic tumor of the uterus. *There was dilatation of both ureters and renal pelvises from pressure, together with double pyelonephrosis with abscesses.* The left ureter was occluded by a ligature. The tumor sprang from the upper and posterior portion of the uterus.

CASE XXII.—Hanot has also recorded an instance of renal infection following pressure upon the ureter by a myomatous uterus. No clinical notes are given. A woman died after symptoms of uremia. On examination after death, in the pelvis was found a round, firm tumor, 13 centimetres in



FIG. 2.

diameter, connected with the uterus and densely adherent on the left side. The left ureter formed a kind of canal hollowed on the lateral surface of the tumor. *Both ureters were compressed; above the constricted area they had a diameter four times the normal.* The kidney substance was contracted and infiltrated by numerous small abscesses.

(e) *The Kidney a Pus Sac.*—But one step remains in the spread of the infection in the kidney following ureteral compression, namely, the conversion of the entire kidney into a pus sac. This condition is shown in the three following cases. The first of these is especially interesting because of the unusual source of the infection.

CASE XXIII.—A woman, age 42 years, had had an abdominal growth for ten years, but there had been no untoward symptoms other than a profuse menstrual discharge and the feeling of the weight of the tumor. Two years before, she had a fairly definite mild attack of appendicitis, and six months later, for the first time, pus appeared in the urine and persisted afterward despite the repeated lavage of the bladder. In May, 1898, a supravaginal hysteromyomectomy was performed by Dr. H. A. Kelly and a firm, irregular mass weighing over six pounds removed. On investigating the condition of the other organs, *the right ureter was found to be compressed by the tumor at the pelvic brim, and above the point of constriction was an extensive pyoureter leading up to a pyelonephrosis, the ureter being dilated to the size of an adult thumb.* There was evidence of an old inflammatory trouble about the vermiform appendix, which was bound down in the pelvis by adhesions, *its top being firmly embedded in the anterior wall of the right ureter above the constricted portion.* The condition of the patient did not admit at this time of an operation upon the right kidney, and, after ascertaining that the left kidney and ureter were apparently unaffected, further interference was suspended. One month later the right kidney with a considerable portion of its ureter was successfully excised by Dr. McCoy (see Fig. 2). The patient made a slow but satisfactory recovery. *In this case it is most probable that the element of urinary infection came from the contact of the inflamed appendix with an abnormally dilated ureter.* The kidney consisted of a mere shell formed by the cortex, which was about an eighth of an inch in thickness, the cavity being filled with pus and broken-down tissue.

CASE XXIV.—Pozzi has published an instance of pyonephrosis in association with a myomatous uterus, and although

the relationship to the ureter is not definitely stated, the rational explanation is that the condition of the kidney followed pressure by the tumor upon the corresponding ureter. The case is briefly as follows: A woman, age 43 years, had noticed for eight years a firm tumor in her abdomen. For four years in addition a fluctuating swelling was felt in the right flank. The patient, shortly before admission, began to lose in strength. There was no acute pain, but a constant feeling of lassitude. The urine contained some albumin. Pozzi first incised the mass in the side and obtained one and a half quarts of pus containing urea, proving it to be pus kidney. Then through a median incision, with great difficulty, he succeeded in enucleating the firm tumor, a densely adherent myomatous uterus choking the pelvis. The patient made a good recovery and refused a second operation, though the pus in the right side accumulated a second time.

CASE XXV.—Fourestie has reported the following somewhat similar case: A woman, age 43, had had for years a pendulous abdomen, but no untoward symptoms until six months before admission to the hospital, when her abdomen began to swell rapidly. She was afterward seized with violent chill, syncope, and weakness. Later there was incontinence of urine.

Examination showed a firm tumor, somewhat movable, the size of two fists and connected with the uterus, which was pushed up against the symphysis pubis. Urine obtained by catheter was clear and contained no albumin. The patient became progressively worse, nausea and vomiting, fecal in character, followed, and tremendous meteorism which was treated by numerous intestinal punctures. She died twenty-five days after the onset of the severe symptoms.

On autopsy the bladder was found to be larger than the stomach and in two sections, with an area of contraction between, hourglass in outline. *The left ureter was as large as one's little finger*, was hyperemic, and contained two small abscesses. *The right ureter was dilated and did not communicate with the kidney*, which was represented by a fluctuating tumor containing pus and five to six times its normal size. The other organs were normal. In this case the myomatous uterus evidently pressed against the base of the bladder and obstructed the ureters near their orifices. The element of infection was superimposed upon a double hydroureter and was more active on the right side.

(To be continued.)

ON SUSPENDING THE UTERUS ON THE ROUND LIGAMENTS.

BY

CARL BECK M D

New York.

(With two illustrations.)

THE interest recently shown in the operation of suspending the uterus on the round ligaments induces me to call attention to the method published by me and illustrated in the *Centralblatt für Chirurgie*, August 21, 1897. I may be permitted to add that my method was described by Dr. C. A. von Ramdohr before the New York Obstetrical Society in the same year, and

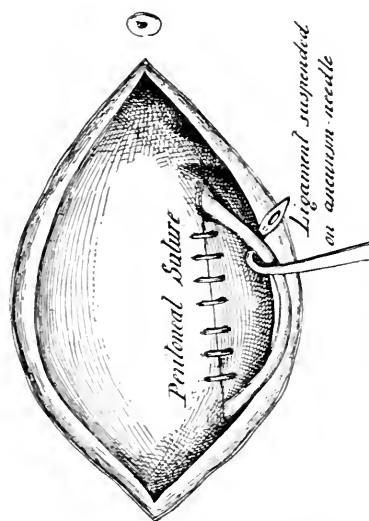


FIG. 1.—The principle of ligamentopexis.

that in 1899 it was made a thesis of graduation in Paris by Poirier, Berger, Guyon, and Albarran.

The main features of this method consist in opening the abdomen in the linea alba by a small incision, seizing the fundus uteri by a traction forceps, and pulling it outside of the abdominal cavity. This procedure is facilitated by Trendelenburg's position. The round ligament of one side is then selected and freed to the extent of nearly three inches, the

isolation beginning near its uterine attachment. Superficial incisions along both sides of the ligament permit the introduction of a grooved director, by means of which the peritoneum can be stripped away bluntly, so that no hemorrhage occurs. The bared ligament is then held up by an aneurism needle and pulled out from the abdomen to such an extent that the peritoneal wound margins can be united underneath (Fig. 1). Six to seven catgut sutures suffice for the purpose. The ligament now rides on the peritoneum.

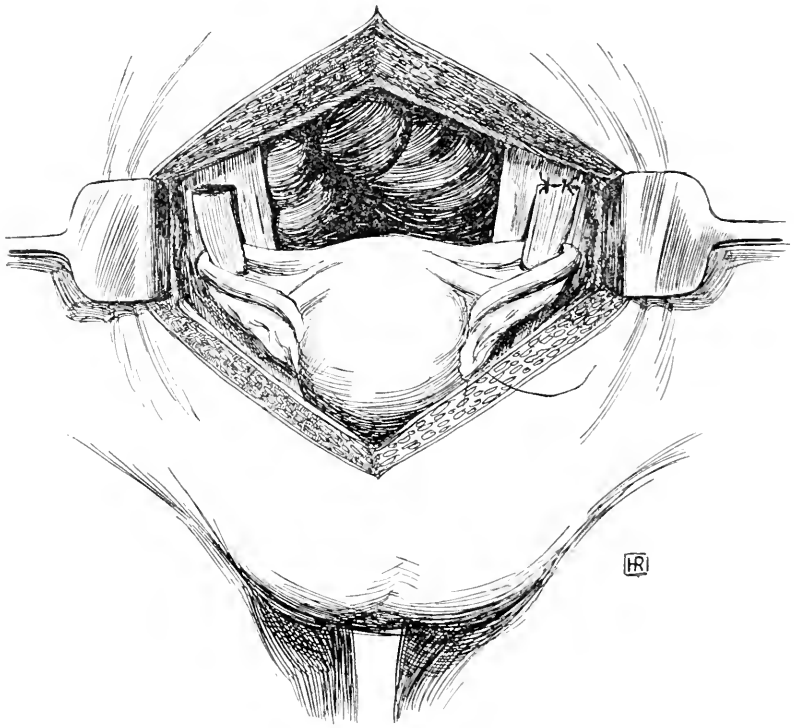


FIG. 2.—Suspending the round ligaments on loops made of fibres of the rectus muscle.

To strengthen this peritoneal anchorage, fascia and muscle are also united underneath, while the ligament is suspended like the loop of a coat on a broad hook. One additional suture through the ligament itself usually suffices for fastening the ligament to the suture row.

The remaining portion of the wound is dealt with in the usual manner. The margins of the integument are brought together by subcutaneous catgut sutures. Two relaxation

sutures, consisting of iodoform silk, are applied through the skin, three-quarters of an inch distant from the wound margin, so that there is no direct contact with the wound line.

For prolapsus uteri the suspension of the uterus on one ligament alone is often sufficient, the fibrous tissue of the ligament being of immense strength. It is true that a lateral position of the uterus cannot be avoided by unilateral suspension, but in practice this proves to be harmless. In retroversion, fixation of both ligaments is of course necessary. This is accomplished by treating both round ligaments alike in the manner described and placing them side by side above their fascio-peritoneal support. If much tension is to be overcome I incise the internal margins of the rectus muscle on both sides, as in my operation for inguinal hernia (see *Medical News*, September 16, 1899), liberating a few muscular fibres, hanging the ligament over them (Fig. 2, right side), and uniting the flaps (Fig. 2, on the left side). Then the ligaments ride transversely upon muscular fibre instead of being placed longitudinally in a parallel direction to the muscle. This holds good for prolapsus uteri also.

From an experience of four years I feel justified in claiming again that the only disadvantage of this operation and its modification is the fact that it requires the opening of the peritoneum. But it has the great advantage of suspending the uterus free and movable in a perfectly normal position which permits of such free motion that there is interference neither with the bladder nor with the rectum, and consequently there is no obstacle to pregnancy, as after the usual methods of ventrofixation.

SPONTANEOUS AMPUTATION OF TUBE AND OVARY.¹

BY

GEORGE H. NOBLE, M.D.

Atlanta, Ga.

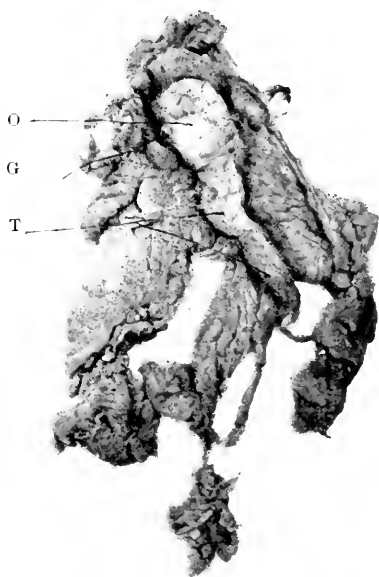
(With illustration.)

FANNIE THOMAS, æt. 40, colored, cook. Had chills and fever when 15 years old. Menses regular and painless until married (at about 19 years of age), when she began having pelvic pains each month, worse on right side. Was never

¹ From Grady Hospital Records.

pregnant. About seven years ago, after lifting something heavy, she had bearing-down sensation in lower abdomen for two weeks. Six years ago had aching over uterus and in right iliac region for two weeks. Hurt her considerably if she made a misstep or jarred herself. Had frequent and painful micturition, and often passed blood, but did not go to bed.

Admitted to Grady Hospital January 8, 1900. Temperature $100\frac{1}{2}^{\circ}$; pulse 102; respirations 24. Menstruation regular every twenty-eight days, duration four to six days, pain in lower abdomen, worse in right side day before and during the flow. Said that often last summer, and almost constantly since Sep-



Spontaneous amputation of ovary and tube. O, ovary; G, point of rupture of Graafian follicle; T, tube.

tember, her head had been aching, usually in right eye, right temporal region and in right side of neck, but at times both sides. Complained of no womb trouble, except that she menstruated twice in December with usual pelvic pains. Had severe headache in right side of head and neck the night before and morning of admission.

Physical Examination.—Heart and lungs normal. Cervix hard; tumor left side, something like tube lying over the mass. Seems to be ovarian cyst with tube attached.

January 11: Laparotomy by Dr. Noble; median incision. Cystoma about the size of cocoanut, with hydrosalpinx of left

side, was found. While breaking up adhesions cyst ruptured with escape of some clear fluid. Cyst with tube and ovary was removed, tube cut off at uterus by V-shaped incision in the uterus, and closed with fine silk, stump of cyst tied with medium silk. Right tube spontaneously amputated about one-half of an inch from uterus by adhesions. Small tumor in omentum, apparently ovarian tissue and supposed to be the right ovary, cut off by adhesions. This piece of omentum, two by three inches, was tied off in two places and removed. Abdominal wall closed with silkworm-gut sutures. Later, piece of tube found connected with the ovary in omentum. January 20: Dressings changed. All but two sutures removed. Union good. Clean. January 22: Two remaining sutures removed. Collodion dressing applied. Cured.

Pathological.—Ovary an inch long, three-fourths of an inch deep, and half an inch thick, firmly attached to omentum. On the inferior side a medium-sized Graafian follicle was found. The Fallopian tube, three inches long, extended away from the ovary where it was attached to the omentum. The ovary showed no signs of any atrophic or cellular change in stroma. Cortical portion slightly increased in hardness. Graafian follicle normal. Fallopian tube in state of atrophy; between fasciculi of muscle some granular matter was found. Fatty degeneration of tube fairly established. A small section of tube, half inch long, was attached to uterus, the rounded stump showing effects of constriction and absorption by the ligature of omental tissue thrown around the appendages of that (right) side. Upper border of broad ligament also gone, but none of it attached to the tube and ovary. The circular form of omentum, acting as tourniquet, was very plainly visible to the eye.

THE RÔLE OF THE LIVER IN THE PRODUCTION OF ECLAMPSIA.¹

BY

W. A. NEWMAN DORLAND, A.M., M.D.,
Philadelphia, Pa.

My object in presenting this short paper is to bring more prominently to your attention one of the recent suggestions in obstetrics and to elicit the views of the members of the Section

¹ Read before the Section on Gynecology, College of Physicians of Philadelphia, May 17, 1900.

on the subject. There has developed during the past few months a strong reaction against the old-established theory of attributing all cases of puerperal eclampsia to a renal inadequacy, pure and uncomplicated, as manifested by an albuminuria of varying degrees of intensity. The tendency to-day is rather to ascribe the convulsive seizures and the albuminuria to one and the same cause—namely, the presence in the blood of a certain toxin, or it may be certain toxins, of unknown constitution and undetermined origin. The great constancy of hepatic lesions, necrotic and hemorrhagic, that have been noted in autopsies upon eclamptic women, and the accompanying urinary changes indicative of imperfect katabolism, have inclined the consensus of opinion toward the view of auto-intoxication in eclampsia, with the greatest interest centring in the liver as the probable laboratory whence the poison or poisons are engendered. The direct proof of this doctrine is still wanting, but numerous arguments in its favor are furnished by the clinic and by pathologic anatomy and experimental medicine. As Bouffe de Saint-Blaise¹ has indicated, the bodily organism is, in a general way, constantly prone to these forms of autointoxication. All food contains toxic material, and in addition to these foreign poisons there are those that originate in the economy, as the bile and other poisonous organic liquids which tend to the production of a toxicosis. Against this danger the organism must constantly fight. It has, in fact, two sets of organs for its defence—namely, the metabolic organs, those whose function it is to arrest and transform the toxic principles (intestines, spleen, lymphatic glands, suprarenal capsules, thyroid glands, and liver), and the eliminating organs (the intestines, skin, lungs, and kidneys). The liver, therefore, it will be noted, is called upon to assume a triple rôle: to collect certain toxic principles in order to turn them gradually into the blood or to excrete them with the bile; to transform other foreign poisons in a similar manner; and, through the antiseptic properties of the bile, to moderate the intensity of intestinal fermentation.

Pregnancy, either by directly increasing the production of the toxic principles or by favoring organic insufficiency, predisposes to an autointoxication. It is characterized from the beginning by a marked increase in the waste products of the body and an increase in the production of leucomaines. An examination of the urine of pregnant women will verify the

¹ La Sem. Méd., October 19, 1898.

truth of these assertions. The toxicity of the urine is increased in healthy women during pregnancy for several reasons. It may be that the excreting products usually contained in the menstrual flux are eliminated in this way during menstrual suppression; the metabolites of both fetus and mother must be discharged through this channel; and, owing to the hydremia incident to pregnancy, the work of the lungs and heart is increased. There is also an increased tendency to constipation with dyspepsia and intestinal fermentation. As long as the kidneys can do so they dispose of the morbid products from the bowel also, and thus still further add to the toxicity of the urine. From this excess of duty these organs are apt to succumb and cease to eliminate the toxic principles, while at the same time the pressure of the gravid uterus upon the bladder and ureters may cause an associated uremia and albuminuria.

This, in brief, is the theory of autointoxication that is now steadily gaining ground as the probable etiology of puerperal eclampsia. Pinard concisely states the matter when he says that "we must admit that, independently of all previous disease, there is a kind of hepatotoxemia that is peculiar to pregnancy, and a certain share of the accidents and complications thereof depends directly upon the condition of the liver. The kidney has only a secondary, although sometimes a very important, relation, while albuminuria is more of a habit than a complication, or *it* may even be, and often is, a sign of hepatic insufficiency." The causes of this latter condition do not include those of renal disease or of albuminuria. Heredity may assume an important part, and old hepatic disorders that were supposed to have been cured may recur in pregnancy. A sedentary life, tight lacing, a warm climate, and arthritism are some of the predisposing causes of hepatic inadequacy.

The signs of liver break-down have been clearly portrayed by Hanot. In the vast majority of the cases it is indicated by various digestive symptoms, as dyspepsia and vomiting. Hanot claims that the incoercible vomiting of pregnancy is only an expression of a slow autoinfection of hepatic origin. Engrafted on these digestive symptoms are others of more or less significance—ptyalism, a diminished toxicity of the urine, non-albuminuric edema, general pruritus, bronzing of the skin, and pigmentary patches. As the liver inadequacy advances the symptoms assume a greater gravity, and culminate in certain cases in marked jaundice, acute yellow atrophy of the

liver, grave albuminuria, peripheral neuritis, poliomyelitis, puerperal mania, and eclampsia. This theory of the hepatic origin of puerperal eclampsia will afford ample explanation for those fulgurant cases not accompanied by albuminuria, and will also open up a new field in the study of the grave affections of pregnancy hitherto but little understood, especially the acute yellow atrophy of the liver and puerperal mania.

As to what the poisonous substance is that is directly responsible for the eclamptic seizure opinions are at variance. The products of metabolism in both fetus and mother are carried to the maternal liver, where they normally undergo katabolic changes to urea and bile salts; but in cases of hepatic inadequacy these products accumulate in the blood and produce eclampsia. It is probable that acetone is formed in the system in this way, and that this substance is at least one of the exciting morbid agents. Thus, Strumpf found acetone in the urine of all eclamptic patients, whose breath, by the way, smells of that substance. The urine at the same time was found to be low in toxicity, while the blood serum was two or three times more poisonous than the serum of health. The presence of acetonuria in leucocythemia, diabetes mellitus, inanition, and puerperal infection indicates that it is a result of rapid katabolism. It may be concluded, therefore, that when the fetus and woman send an excess of waste products to the mother's liver, there occur an acute degeneration and inflammation of the hepatic cells, with an accompanying retention of materials that quickly undergo retrograde processes and break up into toxins, among them being acetone and the other eclamptic poisons. The relation of acetone to metabolism is so important that the urine of pregnant women should be systematically examined for it.

The increased toxicity of the blood in pregnancy was definitely proved by the experiments of Van der Velde¹ upon pregnant rabbits. He found that these animals were very much more sensitive to the action of normal human urine than non-pregnant animals. Thus, clonic cervical convulsions followed the injection into them of 23 cubic centimetres of urine, whereas 51 cubic centimetres of the same urine produced no effect on non-pregnant animals. Again, 18 cubic centimetres per kilogramme of the defibrinated blood of a pregnant rabbit induced convulsions when injected into another animal, while with blood from a non-pregnant animal no ill effects were

¹ Rev. Obstet. Internat., October 11, 1896.

noted until 25 cubic centimetres per kilogramme were injected. When the urine of the same animals was injected, that of the pregnant rabbit caused convulsions with 18 cubic centimetres per kilogramme, while no convulsions followed the injection of the non-pregnant animal's urine to the extent of 30 cubic centimetres per kilogramme. There was thus definitely proved an increased susceptibility of the nervous system in pregnancy to convulsive toxins, which susceptibility persists for some time after labor—at least for three weeks, or during the most active period of uterine involution. Salivation is probably one of the earliest symptoms indicating increased blood toxicity; hence its presence should be regarded as of considerable significance.

Naturally a lessened toxicity of the urine must mean an increased toxicity of the blood. Given a free escape of the nitrogenous elements in the urine, and the liability to eclampsia diminishes in direct proportion. The percentage of urea is an index of the amount of waste successfully excreted, and if this percentage is high there is probably not a great accumulation of poisons in the blood. It becomes evident, then, that it is not so much the amount of albumin that is present in the urine of a given patient that will act as the index to her liability to eclampsia, as the daily quantity of urine excreted and the relative proportion of solids contained in this total amount. The fulgurant cases of eclampsia usually show not even a trace of albumin, but a diminished excretion of the urinary solids.

A CASE OF METASTATIC PAPILLARY ADENOCARCINOMA OF THE RECTO-VAGINAL SEPTUM.¹

BY

HENRY D. BEYEA, M.D.,
Philadelphia, Pa.

(With illustration.)

At the December meeting of this Section I reported the histories and presented the specimens from two cases of papillary adenocarcinoma of the ovaries. It is to the first of these cases that I wish to call your attention again to-night.

¹ Read before the Section on Gynecology, College of Physicians of Philadelphia, May 17, 1900.

The patient, Mrs. M. H., 52 years of age, was first admitted to the Gynceean Hospital on November 14, 1899. She noticed a tumor growing in the right ovarian region in May, 1899, which rapidly increased in size. When I first saw her it filled the pelvic cavity and extended into the abdomen to two inches above the umbilicus. By vaginal examination it was determined to be composed of two semi-cystic masses, each growing from the position of an ovary. A nodule the size and shape of an enlarged lymph gland was demonstrable in the recto-vaginal septum about one inch below the vaginal vault. It was quite hard in consistence, movable beneath the vaginal mucous membrane, and entirely separable from the abdominal tumors. The history of the development and the character of the tumors caused me to make a diagnosis of papillary cyst-adenoma, possibly undergoing carcinomatous degeneration. Knowing the history of these tumors is not a malignant one in the usual sense, and that it is possible for the patient to recover her health if the primary disease is removed, as I had observed in one case, I determined to operate. The greatest complication to operation would be the extreme poor physical condition of the patient, for she was greatly emaciated, very weak, and had a pulse of 130 to 140. The growth in the recto-vaginal septum was movable beneath the rectal and vaginal walls, and enucleation could easily be accomplished at a subsequent operation. This growth, too, having these characteristics, I considered to be a metastasis from the primary growth in the abdomen, which, as is described, occurs by particles or cells of the growth being taken up by the peritoneal stomata and carried to and lodged in a distant lymph channel or lymph gland. Such a lymph gland acts as a filter and in this character of growth, it is believed, forms a complete barrier to further metastasis. If this were true, then the metastatic growth could be removed without fear of further metastasis, unless carcinomatous degeneration had taken place, and there was no macroscopical indication of such a change. Accordingly, after a few days' stimulative treatment, celiotomy was performed and two large papillary cyst-adenomata removed. A gauze drain was introduced over the position of two or three small implantations at the floor of the pelvis. The vaginal growth was left for a subsequent operation. The patient made a slow convalescence, leaving the hospital four weeks after operation.

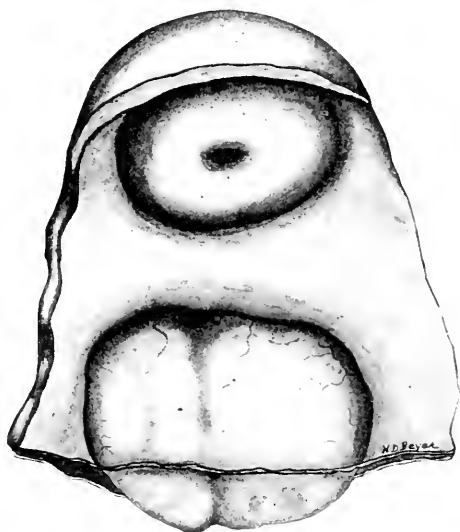
Macroscopically the tumors were typical papillary cyst-ade-

nomata of the ovary. Microscopically also the tissue was, for the most part, that of the same growth, but in a part of each section there were indications of a beginning carcinomatous degeneration. The diagnosis was papillary cyst-adenoma of the ovary with beginning adenocarcinomatous degeneration. I saw the patient occasionally after she left the hospital and each time found her gaining in flesh and strength. A few days ago I had her admitted again for the purpose of removing the metastatic growth. On making a vaginal examination I now found the growth to be the size of a large hen's egg, one and a half inches below the vaginal vault, and the mucous membrane slightly adherent. The uterus was movable and there was no demonstrable return of the disease in the pelvis or abdomen. On the following day an incision was made through the vaginal mucous membrane and the semi-cystic papillary tumor enucleated without much difficulty. The patient made a normal convalescence and will soon leave the hospital. Microscopical sections made from various portions of this growth show the same tissue changes as seen in the primary growth. The carcinomatous degeneration, however, is much more extensive, comprising more than half of each section. There are many distinct and characteristic connective-tissue alveolar spaces filled with proliferating epithelial cells. The diagnosis of papillary adenocarcinoma can be positively made.

This case is of special interest because of the peculiar character and position of the metastatic growth. It was an encapsulated papillary cystic tumor developing in the connective tissue between the rectum and vagina. The vaginal and rectal walls were normal, not infiltrated, but only adherent to the capsule of the tumor. Since the surrounding tissue was not infiltrated, and the capsule of the tumor only became adherent when the growth had reached a large size, it is to be distinctly differentiated from a true carcinoma. I am therefore still of the belief that the metastasis in this case took place and was of the same character as I have stated and is described by Pfannenstiel—that cells of the primary abdominal papillary cyst-adenoma were taken up by the peritoneal stomata and carried to a lymph channel in the recto-vaginal septum, where the proliferation of such cells caused the formation of a growth identical in character. Just how such cells or particles could be carried from the abdominal cavity downward into the recto-vaginal septum by a lymphatic current I am unable to

explain, yet I know of no other way in which such a secondary growth could appear in the recto-vaginal septum. Pfannenstiel states that such metastases can even be found in distant parts of the body, but that their occurrence is extremely rare. A case is described by Wagner where a metastatic growth was found in the subcutaneous tissue. I can find in the literature no reference to a metastatic growth developing in the vagina, as I have here described.

Although the microscopical study of the primary and secondary growths in my case determines it to be a papillary adenocarcinoma, I feel that the patient still has a chance for recovery.



A leiomyoma of recto-vaginal septum.

I have observed one case, where the peritoneum was everywhere covered with papillomatous growths, get well after the primary tumor was removed. This patient has remained well for more than four years. In another case the structure of the tumor was that of a papillary adenocarcinoma. So positive was the diagnosis that I advised the family of the fact and gave an extremely bad prognosis, but the patient reported herself perfectly well two years afterward. Since these experiences it has been my custom to operate on all such patients, regardless of the extent of the disease, and to remove the primary tumor when it is at all possible. I do not include in this statement the primary adenocarcinoma of the ovary. The

ovarian papillary cyst-adenoma cannot be considered a malignant tumor in the usual sense, does not give metastasis as does true carcinoma, or cause cachexia, but, by its secondary implantations and growth, fills the abdominal cavity, causes ascites, and to some extent destroys the underlying tissues and organs. In this way it pushes the patient out of existence. Exploratory operation has been known to retard the progress of growth and greatly lengthen the life of the patient, and is therefore, I believe, always to be recommended. Wherever it is possible to remove all of the primary growth I am convinced the patient has a fair chance of complete recovery.

CLINICAL AND PATHOLOGICAL RECORDS OF TWO RARE GYNECOLOGICAL CONDITIONS.

BY

WILLIAM H. WEIR, M.D.,

Resident Gynecologist to Lakeside Hospital; Demonstrator of Gynecology, Western Reserve University, Cleveland, Ohio.

(With illustration.)

I. *A Case of Primary Cancer of the Cervix Uteri in a Nulliparous Woman.*—It is not often that one meets with a case of cancer of the cervix in a woman who has not borne children or had a miscarriage. Many eminent authorities say that in a wide experience they have never met with such a case, and, upon referring to a number of text books and to the literature on this subject, I have been able to find but few instances on record.

The history of the present case is briefly as follows:

N. S., age 28, an American-born woman, housewife, was admitted to the gynecological dispensary service of the Lakeside Hospital on April 8, 1898. Her brother had cancer of the lip. An aunt on her father's side died at 60 of a fibroid (?) tumor. An uncle died of cancer. Her menses appeared at 14 and as a rule were regular until within a year before her first marriage. Since then they have been profuse and painful, and occasionally she passes clots. She has been married twice, for the first time in 1894, and the second in 1897. Shortly after her first marriage she had an attack of gonorrheal vaginitis, and after coitus there was always a slight discharge of blood

from the vagina. From 1894 to 1898 the menstrual flow was increased by exertion. She has had a profuse leucorrhœa for the past five years. The bowels are constipated, and she has a burning sensation on micturition. She also has pain in the lower abdomen and across the back, which is worse at the menstrual period.

On examination the following note was recorded: The outlet is intact; the cervix is low down and presents an erosion around the os. The uterus is forward; the fundus is ante-flexed. The uterus is very tender, small, and movable. The lateral structures could not be made out. She was given an antiseptic douche and advised to come into the hospital for examination under anesthesia. This she failed to do, and when she returned to us nearly two years later (February 17, 1900) she was complaining of a pain in the lower part of the abdomen, with backache, and some watery discharge from the vagina. Between the time that she first came to the dispensary and the time of her admission to the hospital she had been examined by a general surgeon, who told her that dilatation and curetting would be necessary.

At an examination under anesthesia on February 19, we found the cervix pointing downward, enlarged and hard; the posterior lip was friable and bled on the slightest manipulation. We were not able to satisfactorily palpate the uterus or the lateral structures. Diagnosis: Carcinoma of the cervix. Treatment advised: Curettage of the cervix and hysterectomy.

The general physical examination showed nothing abnormal. Urinary analysis before operation negative. On the day after operation 150 cubic centimetres were passed; red-brown in color, specific gravity 1.028, reaction acid, no sugar, distinct trace of albumin (one-tenth per cent); sediment, considerable, flocculent. Microscopical examination: epithelial cells, many leucocytes, many red blood corpuscles, many hyaline and granular casts, a few epithelial casts, amorphous urates, amorphous uric acid, mucus.

The operation was performed February 21 by Dr. Robb. In order to enlarge the vagina, double episiotomy was first carried out. The cervix, which was flush with the vaginal walls, was then thoroughly curetted, and the lips were brought together by three interrupted silk traction sutures. The mucous membrane of the vagina was incised and separated from the cervix with considerable difficulty. The peritoneal cavity was then opened anteriorly and posteriorly. The uterus was found

to be adherent to the floor of the pelvis and to the omentum. The lateral structures on either side were also found to be adherent. After separating the adhesions binding down the uterus, and clamping and incising the broad ligaments on either side, the organ was removed. The pelvic cavity was then washed out with salt solution and sponged dry, after which sterile gauze was introduced for the purpose of compression and drainage. The clamps were removed after forty-eight hours. The patient made an uninterrupted convalescence, sat up on the fourteenth day, and was out of bed on the sixteenth day.

The macroscopic and microscopic report¹ is as follows:

The specimen consists of the uterus, which measures 8 centimetres in length, 6 centimetres transversely, and 5 centimetres in its antero-posterior direction. The uterine cavity is 7 centimetres in length. Upon the anterior surface of the uterus are a number of ragged adhesions; the mucosa of the corpus uteri seems smooth and about normal.

The cervix is much enlarged and presents an excavated, rough depression upon its lower surface, measuring 2 centimetres in depth and 11 centimetres in circumference. This is due to the removal at operation of the fungous carcinomatous tissue with the curette. Outside the ragged margin of this area is a strip of squamous epithelium of the portio vaginalis measuring about 1 centimetre in width; upon section of the cervix a firm infiltrated area is seen extending down from the curetted surface for from 1 to 1.5 centimetres; this is lighter in color than the surrounding tissue and probably represents carcinomatous invasion.

Microscopic examination of sections of the corpus uteri shows marked endometritis. The superficial epithelium of the mucosa forms a single layer of rather pale, swollen cells, cuboidal rather than columnar in shape, without ciliæ. The surface is slightly irregular in places, owing to the presence of small single papillary projections. The utricular glands are diminished in number; they are small, irregular in outline, and are lined with a single layer of columnar epithelium which in the upper layers of the mucosa is pale, swollen, and irregular, resembling the epithelium upon the surface. In the stroma marked interstitial changes can be noted, the cells being crowded together and fusiform in shape, the tissue resembling a fibroid rather

¹ The pathological study in both cases was made by me in the Pathological Laboratory of Lakeside Hospital.

than a lymphoid structure; it shows extravasated blood and diffuse cellular infiltration, with large numbers of small round cells and plasma cells, together with numerous polymorphonuclear leucocytes, many of which are eosinophiles. The vessels are not plentiful; the mucosa is well defined from the muscular tissue of the uterine wall, which seems entirely free from any inflammatory change and presents a normal appearance. Diagnosis: Chronic interstitial endometritis.

Microscopic examination of sections of the cervix, including the curetted margin and the indurated underlying tissue, shows that there is an extensive infiltration with a typical carcinomatous growth. This takes the form of irregular, well-defined masses of epithelial cells penetrating into the tissue in every direction. The individual cells vary considerably in size, but usually show an oval, vesicular nucleus; karyokinesis is frequently seen. Among the epithelial cells are found numerous small round cells; infiltrating some of the epithelial masses are large numbers of mononuclear and polymorphonuclear eosinophiles. The connective tissue lying between the groups of epithelial cells shows extensive cellular infiltration with small round cells, plasma cells, polymorphonuclear neutrophils, and in many areas vast numbers of mononuclear and polymorphonuclear eosinophiles. Several cervical glands are seen, and, although the carcinomatous epithelial growth encroaches upon these in one or two places, the glandular epithelium forms but a single layer of tall columnar cells of normal appearance.

A small portion of the squamous epithelium of the portio vaginalis is found; it presents a normal appearance. The origin of the tumor is apparently from the glandular epithelium, although the appearance of the growth is not adenomatous. Diagnosis: Carcinoma cervicis uteri.

Microscopic examination of the curettings from the cervix presents an appearance similar to the above.

II. *A Case of Fibromyomata of the Uterus and Fibroid of the Right Ovary.*—Fibromyoma of the uterus associated with a fibroma of the ovary occurs infrequently enough to warrant the report of an additional example. The history of the patient is as follows:

H. R., age 40; occupation, housework; nullipara, but had a miscarriage eight years ago. The menses appeared when she was 15 years old; they were always regular, lasting from five to six days. She has a slight leucorrheal discharge. She

complains of an abdominal tumor with marked dysmenorrhea. The personal and family records have no special bearing upon the case. The physical examination is negative.

On examining the pelvis the following points were noted: The vaginal outlet is relaxed. The cervix is near the outlet and points downward. The uterus lies close to the symphysis pubis and is pushed to the right of the median line; it cannot be clearly made out, but is undoubtedly connected with a mass which fills up the pouch of Douglas and extends up into the abdomen. The whole tumor is about the size of an adult head and of stony hardness. A growth which feels like a subperi-



Fibromyomata of the uterus and fibroid of the right ovary. A, right ovary.

toneal myoma lies behind the main mass in the cul-de-sac and is about the size of the closed fist. It is connected with the main tumor. Diagnosis: Interstitial and subperitoneal myoma of the uterus.

Hysteromyomectomy was performed October 31 by Dr. Robb. The tumor was delivered after the separation of some dense adhesions. The mass occupying the cul-de-sac proved to be an adherent and enlarged fibroid ovary. This was removed together with the uterus. The abdomen was then closed without drainage. The patient made an uninterrupted convalescence.

The examination of the urine before the operation gave negative results, but on the day after operation a considerable amount of albumin and many granular and hyaline casts were found. Subsequent examinations of the urine showed a small amount of albumin, many leucocytes, and occasionally a few granular and hyaline casts. The relations of the ovary to the uterine growth are well shown in the accompanying illustration.

The records of the macroscopic and microscopic examinations are as follows:

The specimen consists of the uterus, which contains a large interstitial myoma in its posterior wall, with both tubes and ovaries attached. The whole mass weighs 1,780 grammes.

The *uterus* measures 17 centimetres from the fundus to the level of the amputation near the internal os, 14 centimetres in its antero-posterior diameter, and 13 centimetres transversely. Situated in the posterior wall is a large spherical interstitial myoma measuring 14 centimetres, 11 centimetres, and 10 centimetres in its respective diameters. The uterine cavity is much enlarged, measuring 14 centimetres in length in the portion of the uterus removed at the operation. The anterior uterine wall is free from myomatous nodules and varies from 1 to 2 centimetres in thickness.

Microscopic examination of sections from the myoma shows the characteristic structure of interlacing bundles of muscular and fibrous tissue running in all directions. Several areas show hyaline change where the nuclei of the cells are degenerated or absent, and the tissue stains diffusely with eosin. Diagnosis: Fibromyoma of the uterus with slight hyaline degeneration.

Sections from the anterior wall show a thin mucosa with very few glands. This thinness is probably due to a stretching out of the tissue by the growth of the large myoma in the posterior uterine wall. The superficial epithelium of the mucosa is intact and consists of a single layer of regular columnar cells of normal appearance; cilia cannot be definitely made out; the surface is smooth. The utricular glands are few in number, somewhat irregular in outline, but are lined by a single layer of normal columnar epithelium. The stroma is rather condensed, the lymphoid cells assuming a somewhat fusiform shape; a few small round cells are found scattered through it; the vessels are small and few in number. The appearance of the mucosa is practically normal. The muscularis

shows no pathological change. Diagnosis: Normal uterine wall.

The *right ovary*, which measures 9x8x6.5 centimetres, forms a roughly spherical tumor, presenting a smaller, elongated excrescence upon one side. It is pearly white in color and stony hard in consistence. Upon section it is seen to consist of interlacing bands of dense fibrous tissue running in all directions, in the midst of which is a small cyst, 7.5 millimetres in diameter, resembling a Graafian follicle. No corpora lutea or corpora fibrosa are visible. Microscopically the greater part of the specimen is seen to consist of dense fibrous tissue arranged in interlacing bands. Many of these have a hyaline appearance, fail to show any nuclei, and take the eosin deeply. The peritoneal cells and germinal epithelium are missing; the tunica albuginea is considerably thickened, and a small amount of cortical substance is found, forming a thin stratum overlying the dense fibrous tissue of the tumor; in it are seen several ova. These are the only typical ovarian elements found, with the exception of the small cyst mentioned above. This cyst fails to show any epithelium on the membrana granulosa, but the theca is well defined. It is probably an old Graafian follicle. The vessels are few in number. Diagnosis: Fibroma of the ovary showing areas of hyaline degeneration.

The *right Fallopian tube* measures 12 centimetres in length and is not thickened; the fimbriated extremity is patent, and the tube is apparently normal except for a few delicate adhesions which connect it with the broad ligament and ovary. Microscopically the tube appears to be about normal: the vessels, however, show slight congestion and an increased number of polymorphonuclear leucocytes in their lumina, which was probably due to trauma resulting from the operation. Diagnosis: Normal tube.

The *left ovary* is slightly enlarged, measuring 6x4x2 centimetres; the consistence is rather soft, owing to the presence of several large Graafian follicles. Microscopically no peritoneal cells and no germinal epithelium are found; the tunica albuginea is thickened, the cortex is dense and fibrous; the ova are scanty, but several Graafian follicles of considerable size are present. The medulla shows the hyaline remains of several corpora fibrosa; the vessels have thick walls and are rather less numerous than usual. Diagnosis: Normal ovary.

The *left Fallopian tube*, 12 centimetres in length, is not thickened; the fimbriated extremity is patent and the appear-

ance is normal. Microscopically the tube is normal except for a congestion of the vessels, which contain an increased number of polymorphonuclear leucocytes, a considerable portion of which are eosinophiles. A slight increase in the number of small round cells and polymorphonuclear leucocytes in the stroma of the folds and the muscularis is also noted. This, however, is slight and is probably accounted for by the traumatism to which the tube was subjected at operation. Diagnosis: Congestion of the tube.

PUERPERAL METRITIS, ETC., WITH SUBSEQUENT ACUTE
INFECTION OF FISTULA IN ANO.

BY

J. COPLIN STINSON, M.D.,
San Francisco.

A. C., age 17 years, always enjoyed the best of health until present illness. In August, 1897, she complained of pain in the rectum and anus on defecation, and later had a considerable discharge of pus from the bowel, when the pain ceased, but there was always some itching and other irritation around the anus. At this time she was pregnant. On October 6, 1897, she went to a midwife, who performed abortion by some injection method. She bled very freely until October 9, but kept on attending to her housework. On the eve of October 8 she had quite severe chills and fever, for which repeated doses of quinine and other antipyretics were given. During the night of the 9th she expelled a four and a half months fetus, but the placenta did not come away. The antipyretics were continued. On October 10, at 10 A.M., temperature was 103° (mouth), pulse 140. Odor from vagina pronounced. I saw her with Dr. Tuchler at 10 P.M. She was quite weak from the excessive loss of blood; temperature 103.5°, pulse 140; face flushed; abdomen somewhat bloated; foul discharge from vagina. As her general condition did not appear good, I decided not to use an anesthetic. After disinfection I cleaned out of the uterus the clots and placenta. The placenta was removed with much difficulty, as it was adherent and in the main came away in pieces. The uterus was freely irrigated with hot weak bichloride solution and dressings applied. October 11, morning, temperature 101.5°, pulse 130; in the evening, temperature

103°, pulse 130; bowels moved with calomel; not much tympanites; much tenderness over the uterus. She was given mild antiseptic vaginal douches every four hours, liquid diet, alcohol sponge baths, etc. At third vaginal douche the uterus was also irrigated and lightly curetted, removing a considerable quantity of shreds, other particles, etc. Temperature was reduced two degrees by curetting, etc., but after three hours it rose again. On October 13 pulse was increased and temperature higher—pulse 140, temperature 104.2°. Intrauterine irrigations, with occasional use of curette to remove shreds, etc., were continued every four hours. The irrigations, etc., reduced temperature two or three degrees, but by the next irrigation temperature would be up again to 104° or thereabouts. On October 14, 1897, she was extremely weak, and she made an antemortem statement that was filed with the coroner. Stimulants were freely administered. At each uterine irrigation I used freely mild bichloride followed by full-strength peroxide of hydrogen and then boiled water, finally dusting cervix and vagina well with aristol. Ice bags were applied to head and chest. Alcohol sponge bath was given every two hours when temperature was 104°. October 15, morning, temperature 103°, pulse 130; in the evening, temperature 105°, pulse 145; quinine sulphate, twenty grains, was given, but it was vomited. In the afternoon, after using peroxide solution, it was found that it did not foam up as at the previous dressings. This showed that the uterus was practically sterilized. On October 14, at one of the dressings, I noticed a small collection of pus (like a boil that was pointing) near the right side of the anus. I removed at the dressing the thin layer of skin and let out a small quantity of pus. On October 15 some more pus came away from the small opening, and in the evening it had a sloughy appearance, showing in addition an infection from the uterine discharges. It presented nearly the same sloughy appearance as the cervix, etc. I now explored the opening and found it was the external orifice of a complete fistula in ano. The discharge had a cadaveric odor. As she was very weak I thought it best to avoid an anesthetic. Fistula was laid open, curetted, cleaned, and lightly packed with iodoform gauze. About an hour after the operation pulse was 150, temperature 105.6°, showing a rapid absorption of septic material from the cut surfaces. She was freely stimulated, and two hours later was in a profuse perspiration. After this the pulse and tempera-

ture gradually lowered, so that by October 17 the temperature was about normal. She was given mild antiseptic vaginal douches thrice daily: fistula was dressed twice daily; she made a slow recovery and was allowed up October 23. Fistula was completely healed by November 1. She was put on tonic treatment for several months in order to combat the anemia and to build her up. Several months later she was still weak, pale, thin, and complained of marked swelling of the lower limbs. I saw her June 16, 1898, when she appeared to be in good health again; menstruation regular; at times she had a slight vaginal discharge; some pain in right ovarian region; slight backache; no symptoms referable to rectum or anus. I saw her again August 7, 1900, and her present health is good.

326 KEARNY STREET.

A CASE OF EXTRAUTERINE PREGNANCY WITH RETENTION
OF FETAL BONES FOR SEVENTEEN YEARS.¹

BY

I. P. KLINGENSMITH, M.D., F.S.Sc.,
Blairsville, Pa.

EXTRAUTERINE gestation is the most important of the abnormal varieties of pregnancy, when we consider the serious and fatal results attending it. According to Parvin, it occurs once in about five hundred pregnancies, and his assertion is confirmed by Lawson Tait, Joseph Price, and others.

It has been stated that woman is alone subject to this irregularity; but this is certainly erroneous, as instances of it have been observed in the cow, sheep, bitch, and other animals. The length of time that a fetus may remain in the abdomen, producing comparatively little distress, would not be credited unless we had unequivocal proofs of the fact; but of late years this subject has received much well-merited attention, leading to the establishment of definite rules for the management of this dangerous class of cases.

As the subject of ectopic gestation is too large to discuss in this brief paper, I will not attempt to enter into the history, pathology, and etiology of this condition, but bring before the Society a most interesting case that has come under my per-

¹ Read before the Indiana County (Pa.) Medical Society, Indiana, Pa. January 9, 1900.

sonal observation. I will therefore proceed with the history of the case in question.

Mrs. M. E. D., age 53; first menstruation at 17 years of age and regular after twelve months, menstruation lasting four days and never accompanied by pain; general health always good; never suffered from leucorrhea; menopause at 51; married for fifteen years, giving birth to four children, one of the labors being a twin birth, with one miscarriage at six months. From her statements I learn that her labors were generally tedious. She was always able to nurse her children. The miscarriage referred to occurred in 1879, during the latter months of which year she again became pregnant, as she believes, going on to full term. Fetal movements were at no time strong. She suffered from colicky pains at about the tenth week of this pregnancy. In August, 1880, the membranes ruptured, the amniotic fluid gradually escaping, no labor pains, the abdomen diminished in size, followed by a very offensive, fetid discharge which continued for one year, when she again began to menstruate, for the first year every six weeks, after which time menstruation had become regularly established. During the above-mentioned period of two years the patient could not lie on her right side, on account of pain in the right iliac region.

From 1882 to 1896, a period of fourteen years, she experienced no particular inconvenience.

During the latter half of the year 1896 she suffered from a profuse, continuous diarrhea, accompanied by pain simulating the pricking of pins, the feces being rough and sandy, evidently containing calcareous matter from the fetal bones.

In January, 1897, Drs. J. L. Anderson and William A. Hinchman, of Tarentum, Pa., removed one cranial and one long bone from the rectum.

Fetal bones were removed by myself per rectum on March 5 and 16 and August 28 of the same year, making a total of twenty-four bones.

After the removal of the last bones the patient rapidly regained her health and strength, so that by the end of six months the recovery was complete.

PLACENTA PREVIA:

REPORT OF A CASE.

BY

L. W. ATLEE, M.D.,

Philadelphia, Pa.

Mrs. S., age 35 years, American; a stout, well-developed countrywoman, residing near West Chester, Pa., the mother of nine healthy children. Her last menses appeared in the early part of September, 1899, exact dates not known, the woman being rather stupid. She noticed nothing unusual during her pregnancy, but mentions having had a bad fall during the first half. During the past two weeks she has had a troublesome, hard, barking cough, without her general health being affected. On April 9, 1900, she felt the waters coming away and had herself examined by a physician, who assured her it was not from the uterus but from the bladder the water came. However, during the following week she could feel little gushes of water come away whenever she coughed violently, but during this time she felt no pains of any kind to indicate labor had begun.

On April 14 she came by train to Philadelphia in the forenoon and was much on her feet, walking a great deal, among other visits going to a hospital to see her mother, which gave her considerable agitation. On returning from this visit, while walking in the street, she was surprised by a very copious gush of warm liquid from the vagina, which she attributed to a sudden increase of the flow of the waters. She hurried to her sister-in-law's residence, only some five blocks from the hospital, fortunately, for on her arrival she began to feel weak and giddy. She was immediately assisted upstairs and laid down on a cot, and her underclothes found soaked with blood. From 4 o'clock P.M. until 10:30 P.M., when I was called to her, she had intermittent labor pains, at each of which the blood gushed out from the vagina. I found her bedewed with cold perspiration, restless, frequently yawning, the pulse 140 per minute and thin and weak, and such a "slaughter-pen" appearance I hope it will never be my lot to see again. Those

present exclaimed "that was nothing; I should see the clothes we had taken off her." To find I had a case of placenta previa was a great surprise to me, for the husband, who had called for me, said his wife was two months pregnant, and I had gone prepared to find a simple case of miscarriage; but the wife said, when I got there, she "expected" the end of May. A minute or so after my arrival she had a pain, and inspection of the parts showed liquid blood and clots issuing from the vagina. Immediate examination was made by the finger, which found the os uteri well dilated and occupied by a pulpy, friable mass and blood and blood clots. The presenting fetal part was so high it could not be reached by the finger. I then attempted to gently introduce the hand into the vagina, which was large and soft, but the woman became so violent, kicking me with her feet, that it was decided to give her a few whiffs of chloroform to quiet her. About half a drachm was put on a handkerchief and given her. She took it so badly, ceasing to breathe as soon as she began to get a little under its influence, I decided to try again to introduce my hand and get hold of the feet, but she acted in the same unruly manner; but by dint of shouting at her to breathe and slapping her chest she was partially anesthetized, when she began to breathe regularly. Instant advantage was taken of this to introduce the hand and separate the placenta on the right side where the feet were fortunately met. These were seized and drawn down, and gentle traction made until it was decided the hips had engaged. Half a drachm of fluid extract of ergot was then administered and the rest left to the natural efforts. A few pains completed the labor; the child was dead—a seven or eight months fetus from its appearance. The placenta was expelled by the next pain, the uterus assumed the reassuring ball-like condition in the hypogastrium, and after cleaning the woman a little, applying a *clean napkin* (a bit of old rag was what was given me), a bandage was applied to the abdomen. Before I left the house the woman was sound asleep and the pulse 88.

In this case the failure of the presenting part to engage seems to have been due to the faulty placental attachment, for the pains were apparently strong—that is, as far as one can judge by the rigidity of the uterus during their continuance—but the os was widely dilated, so that expulsive efforts were only required to push the placenta before the presenting part. In such cases the indications are to bring down some fetal part

to act as a tampon; the best being a foot or the feet, if necessary by turning. To reach them we are told to separate the placenta by sweeping a finger between its uterine surface and the uterus on the side where it is least attached—the right usually—or, failing this, to push the fingers through it, seize the feet, and pull until we feel assured the breech is filling the os tightly, and then, if there are no further indications to hurry the labor, to leave the rest to the natural forces.

The puerperium in this case was entirely uneventful, the woman being able to return to her home by rail on the ninth day—at least she was with difficulty persuaded to wait until then.

Lusk says: “Fortunately placenta previa is of rare occurrence”; in the first 1,600 confinements in the New York Emergency Hospital there was not one case recorded.

As to the prognosis in this condition, he says: “Finally, it is impossible to analyze the statistics of placenta previa without coming to the conclusion that the result depends in a large measure upon the personal qualities of the physician. A self-possessed man, cool, resolute, with clear ideas of the anatomical conditions to be dealt with, will, if summoned in season, apparently deprive even placenta previa of a good share of its terrors.”

The occurrence of hemorrhage of a fatal type during the latter half of pregnancy and preceding labor was noted by the ancient authors, but its cause was not understood; they explained the existence of the placenta in its abnormal position to its having become detached from the fundus uteri and dropped to the os, where it was found attached by the formation of clots. Henri de Deventer, in his “Observations Importantes sur le Manuel des Accouchements,” Paris, 1734, chap. xxxi., p. 178, tells us: “In the same way, when the placenta detaches itself from the uterus and its thickest part presents itself at the orifice, it prevents the child from coming out. It is this which one feels first by the touch when the two fingers introduced into the orifice of the uterus find neither the head nor the membranes, but, on the contrary, a thick, soft flesh which is easily distinguished from that of the child, which is more solid of itself or on account of the bones it covers. We feel, moreover, that it is a formless mass, not resembling any of the fetal parts. This soft flesh prevents the midwife ordinarily from touching any of the fetal parts near the orifice. A second sign of the *fall* of the placenta is the loss of blood that accompanies

it, sometimes even in such abundance that it places the mother and child in evident danger. In this case the child must be brought forth as quickly as it can be done"; this, he tells us, is to be accomplished by introducing the fingers and rupturing the membranes, first by separating the placenta if we can, otherwise by pushing the fingers through it. "The waters are no sooner emptied than the flow of blood diminishes or ceases altogether, because the cotyledons of the womb that the detachment of the roots of the placenta leave open, and which cannot close themselves as long as the size of the uterus does not diminish, draw together as soon as the waters have flowed off; because then the uterus can contract itself, in which it is aided by the weight of the intestines, which press on the cotyledons and close more exactly the orifices of the veins. Here is the cause of the loss and why it ceases," he adds with much apparent self-complacency; but if his anatomical ideas of the condition were incorrect, he at least had the true key to the required treatment: "*il faut faire sortir l'enfant le plutôt que faire se peut.*"

William Giffard, surgeon and midwife, in his book published in London in 1734, Cases 15 and 16, remarks: "The first thing I met was the placenta, which I found closely adhering around the os internum of the uterus, which, amongst many other instances, is a proof that the placenta is not always fixed to the bottom of the uterus, according to the opinion of some writers in midwifery. Its adherence to the os internum was, in my opinion, the occasion of the flooding, for as the os internum was gradually dilated the placenta at the same time was separated, from whence the effusion of blood."

From André Levret's "*L'Art des Accouchements*," etc., Paris, 1766, I quote the following, page 48, par. 275: "The placenta may be attached indiscriminately on any of the parts of the internal surface of the womb, not even excepting the circumference of the internal orifice on the upper part of the neck"; and on page 52, par. 295: "When the placenta is attached to the circumference of the superior part of the neck proper to the womb, the woman cannot escape loss of blood toward the latter part of her pregnancy"; and again at page 354: "I engage myself to prove, then: 1. That the placenta implants itself sometimes on the circumference of the internal orifice of the uterus, that is to say, on that part of the neck that goes to join that viscus, not that which looks toward the vagina. 2. That in this case [he reports a case] the loss of blood is inevitable in

the latter part of pregnancy. 3. That there is no more sure way to remedy this accident than by forced labor (*accouchement forcé*).” He enters fully into the anatomy of the pregnant uterus, and explains physiologically the possibility of the attachment of the placenta at the os uteri.

In the eighth edition of “*A System of General Surgery*,” etc., by Dr. Lawrence Heister, London, 1768, chap. cliv., page 278, I extract: “An adhesion of the placenta to the mouth of the uterus, which separates when that organ relaxes itself at the time of delivery, so that the more the os uteri is dilated the greater separation is made of the placenta”; and on page 279 he says: “There is no other remedy left than to extract the fetus and the secundines with the hand, because the ruptured vessels of the uterus cannot contract themselves so long as they are distended by the fetus and its appendages.” If it were not being too prolix we might quote from Paul Portal, whose book appeared in Paris in 1685, wherein he expresses himself in regard to these cases in such manner we cannot but feel convinced he understood their cause; he surely understood the necessary treatment, for he mentions in minute detail the prompt and effective measures he so successfully employed to save both mother and child in some severe cases wherein he was called in consultation.

If the light of the present day does not dazzle us so much as to prevent our reading the history of medicine aright, we shall be surprised at the uniformity of the pictures of disease bequeathed “to us by the ancient writers, and of their identity with those that Nature furnishes us to-day. It is not the diseases, but the theories invented to explain them, that have undergone the greatest mutations.”

The more we read of the old medical authors the more forcibly the fact impresses itself on us that the art of medicine was before the science, and that clinical experience had taught the old practitioners the treatment for placenta previa was the emptying of the uterus, and whether the placenta had dropped to the os uteri by being detached from the fundus or had developed in that unusual place was not a knowledge which would be much needed by a physician called to the bedside in these cases.

TRANSACTIONS OF THE SECTION ON
GYNECOLOGY OF THE COLLEGE OF
PHYSICIANS OF PHILADELPHIA.

Stated Meeting, May 17, 1900.

JOHN C. DA COSTA, M.D., *in the Chair.*

DR. H. D. BEYEA presented

A CASE OF SECONDARY PAPILLARY CYST-ADENOMA OF THE
POSTERIOR WALL OF THE VAGINA.¹

DR. WILMER KRUSEN.—The subject is worthy of an extensive discussion, and the reader of the paper of a larger audience than is present to-night. Two cases of this kind come to my mind, one that of a woman whom I operated on three years ago, removing a papillomatous growth adherent to the anterior wall of the rectum over an area of 10 centimetres in diameter. Thirteen months afterward there had been extensive recurrence and the patient was beginning to suffer from carcinomatous obstruction of the bowel, and the subsequent history of the case was bad. The other case was one operated upon by Dr. Montgomery, in which there was recurrence in the upper portion of the vagina and uterus. Soon after the second operation colostomy was done, and the woman is now living and quite comfortable. This contribution to the study of pathology of papillomatous cysts is very valuable; they are the most undesirable of all such conditions with which we have to deal.

DR. C. P. NOBLE.—I have listened to the reading of the paper with much interest. Personally I have never seen a case of secondary detached growth of this kind in the vagina or under the vagina. It seems rather difficult to explain how, if the growth was not malignant, it should have grown in this location, on the supposition that some of the cells of the papillary growth entered the lymph channels. I would be glad to have some light on the subject. If that is the explanation, it would seem that the secondary tumor should have been found in the lumbar glands.

My remarks will simply bear upon the general subject of papillary tumors of the ovary. Of these I have operated upon quite a number. There is the greatest difference in these tumors; some are benign, others undoubtedly carcinomatous. In a number of benign cases operated upon the patients lived for years without further trouble. I have seen a number of

¹ See original article, p. 373.

cases which were found to be inoperable when the abdomen was opened, and yet the patients lived a number of years.

I think we are apt to make a too bad prognosis when we fail to do a complete operation. In cases in which the papillary tumor cannot be completely removed, it would be my suggestion to give the patient the benefit of the doubt and save our own credit by not making too bad a prognosis.

I should be glad to hear from Dr. Beyea as to his experience in the percentage of cases in which papillary tumors are carcinomatous and those which are not.

DR. W. A. N. DORLAND.—I saw one case, six years ago, in which the papillary cyst had invaded the peritoneum; there was a considerable amount of ascites present and also some metastasis into the upper vaginal wall, which was not operated upon owing to the exhausted condition of the patient. As much of the material was removed from the peritoneum as possible, but the patient succumbed one month later.

DR. BEYEA.—As said, this case is especially interesting because of the peculiar position and form, macroscopically and microscopically, of the metastatic growth. As far as I can learn, no similar case has been described. The fact that it was an encapsulated, semi-cystic papillomatous growth, microscopically identical with the primary ovarian growths, would conclusively prove it to be a metastasis. That it did not infiltrate the surrounding tissues and was enucleated from its capsule would distinctly differentiate it from true carcinoma, and therefore it seems rational to conclude that metastasis took place through a lymph channel and to the recto-vaginal septum, as I have described. I know the direction of lymphatic distribution and lymph current is from below upward, yet it would seem possible that there exist intercommunicating lymph channels and a recurrent lymph current. In this way a cell or particle might first be carried downward and then upward. I am unable to offer any other explanation for the presence of a metastatic growth in this position.

From my microscopical studies of these ovarian tumors I would say that about one third are primary papillary adenocarcinoma and papillary cyst-adenoma undergoing carcinomatous degeneration. In my experience primary adenocarcinoma of the ovary is extremely rare. I have observed only the case reported at the December meeting. I had best say, therefore, that one-third of the papillary cyst-adenomata undergo carcinomatous degeneration. They tend to destroy underlying tissues and organs to some extent, but are mostly primary or secondary (implantation) outgrowths which fill the abdominal cavity, cause ascites, and thus push the patient out of existence.

That the papillary cyst-adenoma of the ovary with extensive secondary implantation on the peritoneum can disappear after an operation in which the primary growth is removed, and the patient get well, is shown in the case referred to. Here there were two large retroperitoneal papillary cysts which had rup-

tured, and implantations of various sizes covered the peritoneal and visceral peritoneum as far as we could explore. The patient was operated upon one morning, both cysts were removed, and, as there was considerable oozing from the secondary papillomata, a glass drainage tube was introduced. The hemorrhage through the drainage tube gradually increased, became alarming, and it was necessary to reopen the abdomen. A small spurting vessel was found where one of the small papillomata had been broken off. This vessel was secured by ligature and the pelvic cavity packed with sterile gauze. The gauze could not be entirely removed for several months. The patient has remained well over four years, and, although she comes for examination each year, there is thus far no indication of a return of the growth. In one case it was thought that the cystoma could not be removed and the abdomen was closed. This patient died six months after operation. Should such a case come under my observation again, I would suture the cyst wall to the abdominal incision, open the cyst, clear out the papillomata, and pack the cavity with gauze. In the cases I have observed where there were no secondary papillomata and the primary tumors were removed, the patient always got well.

In the literature I find reported by Fritsch a case where a cystoma and a small omental metastasis was removed, leaving a small cyst in the mesentery. The patient was well five years later and had no indication of a return of the growth. Minert reports a case where there were secondary implantations and the patient was well after eight years. Cases having ascites and extensive implantation have lived four (Pfannenstiël), nine (Pyle-Smith and Baker Brown), and eleven (Flaischland) years after puncture or abdominal incision.

Pfannenstiël, who has made the most extensive study of these tumors, believes that two-thirds of all papillary cystadenomata of the ovary are adenocarcinomata. Dr. Kelly states that this has not been his experience, that the greater number of his patients have gotten well, which would not have happened in adenocarcinoma.

DR. W. A. N. DORLAND read a paper entitled

THE RÔLE OF THE LIVER IN THE PRODUCTION OF ECLAMPSIA.¹

DR. KRUSEN.—I have been much interested in Dr. Dorland's paper. Four years ago I had a patient who developed eclampsia and at the same time acute catarrhal jaundice, showing a definite relation between the activity of the hepatic function and the causation of eclampsia. When we consider how frequently in infantile convulsions there may be a diversity of causes, I am struck with the thought, why should we not have, as we are probably beginning to recognize, a further diversity of causes, when we come to accept the microbic origin of eclampsia? I believe firmly that if we use more salines and

¹ See original article, p. 369.

calomel in the last months of pregnancy, stimulating the hepatic activity, the causes of eclampsia might be eliminated. I personally thank Dr. Dorland for his paper.

DR. COLES.—Dr. Dorland's paper has interested me very much. I see a good many cases of eclampsia, and unfortunately I see them late when they have had many convulsions. I have seen the patient in the worst form of eclampsia, in whom an examination of the urine previous to the attack showed no casts and no albumin; after the first convulsions there were found both, due to irritation of kidneys by toxins. In one case the woman had the first convulsion at 3 o'clock and was dead at 10 o'clock. In a case seen recently, an examination of the urine showed specific gravity only 1.002, no albumin, no sugar, and the amount of urea was 0.2 of 1 per cent. The patient looked perfectly well, but she had the symptoms of toxemia and of course the premonitory symptoms of eclampsia. There were headache, nervousness, irritability, and restlessness, and when I saw her I thought she was in a condition almost verging on eclampsia, and still there was no albumin or cast in the urine at all. I have come to the conclusion that in the examination of the urine we need pay little attention to albumin. Of course the woman with Bright's disease is in more danger in pregnancy than when not pregnant, but I would look upon that form of eclampsia more favorably than upon that produced by hepatic and intestinal toxemia. The indications of danger should be based on the amount of solids eliminated in the urine and the quantity of the urea. If this gets below 0.8 of 1 per cent we find the patient more or less toxicemic. Unless the kidney disease is very bad, I do not look upon it as a very grave condition. I have seen five or six cases of that form of eclampsia and all of them recovered. One woman in the Jefferson Maternity had a very bad case of acute Bright's disease: she had but one convulsion and got well.

I give calomel, one-eighth to one-quarter grain, three times a day, and it is surprising how the solids and urea increase and to note the general improvement. This is usually all that is necessary, with the regulation of diet and hygiene.

DR. W. A. N. DORLAND (closes).—Attention has been called to the absence of albuminuria in cases of eclampsia. I saw one case last summer which at 6 o'clock in the evening, when the last examination of urine was made, had no albumin; at 11 o'clock the same night there was the first spasm, and the patient died shortly after the second convulsion, early in the morning. In another case, brought into the hospital about a year ago, there was apparently a condition of advanced uremia, but without albumin in the urine, and the patient died half an hour or so after admission. In neither of these cases was there an examination for the amount of urea present. Since then I have looked up the subject more thoroughly and have come to the conclusions which I have presented in the paper to-night. The two points which I would emphasize in

this connection are: 1. The fact that albuminuria bears an uncertain relationship to the development of eclampsia, as has been noted by others. 2. That the principal symptoms of eclampsia are largely those of the toxemia and not of the kidney disease.

TRANSACTIONS OF THE WOMAN'S HOSPITAL SOCIETY.

Stated Meeting, May 29, 1900.

The President, JOSEPH E. JANVRIN, M.D., in the Chair.

CASE OF PREGNANCY FOLLOWING CONSERVATIVE WORK UPON BOTH OVARIES AND TUBES.

DR. A. PALMER DUDLEY.—I have been advocating conservative surgery for a number of years. I have here a reprint of an article that I read before the International Congress of Gynecologists in Amsterdam; from its conclusions I quote: "Following this line there were 127 consecutive cases of operation upon the ovary without a death, including 2 cases of gonorrhea." Of this series one proved to be very interesting, being the only one of the series where I had the privilege of reopening the abdomen—*i.e.*, making a second abdominal section upon a conservative case. There is a possibility that other cases may have drifted to other gentlemen. One operation was performed upon the patient in November, 1898; at that time I removed one-half of each ovary and tube and performed a hysteropexy for retroversion. The operation was successful. I did not know just what the result would be, but the woman went on menstruating as usual and visited the clinic from time to time. The second operation was performed March 20, 1899, for a supposed extrauterine pregnancy. She came to see me, suffering intense pain in the left side, with nausea, vomiting, and constant dripping of blood from the uterus; there were changes in the areola of the breasts, cessation of menstruation, and I supposed at the time that this patient had an extrauterine pregnancy because of the local signs that she developed. With all these symptoms, I at once sent her to bed and the next morning opened the abdomen a second time for a supposed extrauterine pregnancy, which proved to be a pelvic hematocoele. There were no evidences of an extrauterine pregnancy whatever. I removed the left appendage. On the right side, when I came to get the appendage up, I found the ovary covered with adhesions, which I scratched off with a curette; then I brought up the stump of the tube, which was about one and a half inches long, and in the tip of the tube I found a silk suture, that had been placed there five months before and had remained unabsorbed, encircling the mouth of the tube. Before she was placed under ether she asked that I should preserve

her ovaries and tubes if possible. I therefore left what remained of the right tube and ovary. She made a perfect recovery. When I saw her last she was menstruating regularly and was comparatively well. That was in March, 1899. I saw her again in April, 1899. She came into my office day before yesterday fully six months pregnant, with the child in the right occipito-anterior position. The pulse beat was 37 to the quarter. The hysterorrhaphy still existed, and everything seemed to be in perfect condition. She carried her pregnancy as though she had never been operated upon. This is one of the greatest triumphs of conservative ovarian surgery that ever came within my knowledge, where a woman, after two abdominal sections (conservative work done upon tube and ovary a second time, the ovary scraped off with a sharp curette and touched with pure carbolic acid, cauterizing the whole surface, dried and dropped back into the abdominal cavity with the carbolic still on it), comes back to be delivered on the 22d of August next, and no doubt she will carry to full term and will probably have a female child. I cannot express to you what this means to me, because I have worked along this line and reported cases from time to time. But here is a case where there is proof positive (and there can be no question about it); and, in order to be sure that I was right, I called my brother-in-law, Dr. Adams, into the office and had him find the fetal heart and count its beats. This was a case of a second laparotomy, the woman now pregnant six months, with fetal heart and the position of the child noted. I wanted the members of the Woman's Hospital Society to know it.

DR. E. E. TULL.—Why do you say it will be a female child?

DR. A. PALMER DUDLEY.—In every case of obstetrics that I have cared for in many years I have made records of the heart beat; by this means I have been able to tell whether it is a female or a male child; I have only in one instance been mistaken. But where I find the fetal heart beating from 120 to 130, almost invariably the child has been a male; if the heart beats above that number there is a female child. In the case just reported the beats were 37 to the quarter. Careful observation should be made, with the patient resting quietly, with no irritation of the uterus by pressure. I have made only one mistake in at least fifteen years.

DR. E. E. TULL.—I know that is generally laid down in books; some years ago I carried out accurately this observation in a number of cases. There were a few in favor of the rule. Excitement or nervous impulses will affect the rapidity. I once made observation on a fetal heart in a mother sick with pneumonia; she was so sick that they had called the priest and she was expected to die within an hour. The fetal heart sounds could be heard, and the question was raised whether it would not be advisable to do a Cesarean section and so try to save the child, or else make a rapid delivery with forceps. I delivered rapidly. It was an eight-months child. After the

birth of the child, before the cord was cut, the temperature was found to be normal; the pulse beat was 140. The mother's pulse was from 160 to 170 and temperature 106°. It seems to me that it is the vitality and the weight rather than the sex that causes the type of heart beat.

DR. J. E. JANVRIN reported

A CASE OF NEPHRECTOMY.

The following case of nephrectomy is reported more especially on account of the fact that the diseased condition of the kidney was supposed, prior to the operation, to be due to impacted uric acid calculi in the pelvis of the kidney, and not to any other cause; yet the result of the operation was to find the kidney absolutely free from calculi, but in the early stages of tubercular infiltration.

Miss S. F. C., age about 25 years, consulted me some two years since on account of severe and repeated attacks of pain in the right kidney. These attacks of colic often extended down the right ureter, even to the bladder. An examination of the pelvic organs showed no trouble whatever, aside from what has just been mentioned. From the history of the case I came to the conclusion that, although she had passed at times small amounts of uric acid, there was probably a stone existent in the pelvis of the kidney, which at times was making an effort to engage in the ureter. I placed her upon alkaline treatment, also ordered Buffalo Lithia Water, regulated her diet, and gave general tonics. For about a year and a half she went along very comfortably, having but few attacks of pain. In December, 1899, the attacks of renal colic returned, and about Christmas time she passed two small uric acid calculi. Subsequent to this, during the winter and early spring, several attacks of what appeared to be renal colic occurred. Early in March I saw the patient at her home in Pennsylvania in consultation with her physician, and it was decided that she should come to the city for observation and probably an operation for the removal of the calculi supposed to be impacted in the right kidney. March 17 Dr. Willy Meyer saw her in consultation, and with the cystoscope we examined the interior of the bladder and drew some urine from the *left* ureter. On account of considerable swelling around the mouth of the right ureter it was impossible to pass a catheter into it. The urine from the left kidney seemed to be perfectly normal. That from the bladder, containing, of course, the secretion of both kidneys, showed evidence of trouble in the right kidney. I quote from the report of Dr. Sondern, who made the examinations:

1. "The twenty-four hour specimen obtained from the bladder March 16: The presence, I believe, of somewhat more albumin than the pus, etc., would account for, and a few hyaline casts only, in consideration of the general character of the specimen, would, I believe, indicate a renal hyperemia only. . . .

Direct evidences of a lesion of the renal pelvis could not be made out."

2. "Bladder specimen obtained immediately before cystoscopy: This shows the same general character as detailed above."

3. "Specimen obtained from left kidney: The absence of albumin and of renal elements microscopically would, I believe, allow exclusion of kidney lesion. A careful search for causative elements resulted negatively in all three specimens."

This report showed at least that the left kidney was healthy and that the trouble, whatever it might be, was located in the right kidney and possibly also in its ureter.

On March 21 I obtained another specimen from the bladder, and this was examined by Dr. Franz Torek. His report was as follows:

"The microscopical examination of the sediment from Miss C.'s urine shows uric acid gravel from the pelvis of the kidney *in very considerable quantity*, pus corpuscles, epithelia from the convoluted tubules, epithelia from the pelvis of the kidney, epithelia from the upper and middle layers of the bladder, epithelia from the ureter; red blood corpuscles very scanty, oxalate of lime, some connective tissue. The diagnosis, therefore, from the microscopical examination, is: Pyelitis calculosa, catarrhal nephritis and cystitis."

Under all the circumstances I deemed it perfectly justifiable to cut down upon the right kidney and see what the conditions were and then be guided by what I found as to further procedure.

March 23, assisted by Dr. Torek and the house staff of the Skin and Cancer Hospital, I made the usual lumbar incision, and on going down and lifting up the kidney could find no evidence of calculi, as far as could be judged from palpation and the sense of touch. I then made a free incision down through the body of the kidney to the pelvis, laying it thoroughly open, and made a careful examination of the two halves and the pelvis. No calculi could be discovered; but it was perfectly evident that some form of inflammatory disease existed, the lining of the pelvis being thickened and eroded at points, and underneath these points a slightly indurated condition.

On exploring the ureter with small ureteral catheter and probes, also, I found an obstruction about six inches below its origin from the kidney. This obstruction would not permit the passage of the smallest probe or catheter, although the history of the case showed that the obstruction could not be complete, since the urine had certainly found its way down through the ureter without much difficulty.

For a few minutes I was in doubt how to proceed, but very quickly came to the conclusion that, with the diseased condition of the pelvis of the kidney and the nearly occluded ureter, it was best to remove the kidney. This was done, one ligature being applied to the artery and vein and another to the ureter.

The patient made a rapid recovery and at the end of five weeks left the hospital for her home in excellent condition.

The kidney was examined by Dr. James Ewing, and the following is a copy of his letter to me, dated April 6:

"DEAR DOCTOR.—I have to report that the sections from the pelvis of the kidney which you excised show a superficial inflammation with erosion of mucosa and the presence of a few *miliary tubercles*. It was evidently a case of early tuberculosis of the pelvis. Very truly yours,

"JAMES EWING."

As stated early in this report, the symptoms pointed most thoroughly to the presence of uric acid calculi, yet none were found, but instead an early tubercular infiltration. There had been, however, a few small uric acid calculi voided in the urine some three months prior to the extirpation of the kidney. The presence of this form of calculi and tubercular disease is, I believe, very unusual. The two conditions very rarely go hand in hand. In this respect the case is rather unique.

DR. HENRY GRISWOLD.—It was found to be a tuberculous kidney?

DR. JANVRIN.—Yes.

DR. GRISWOLD.—No other development?

DR. JANVRIN.—None. It is two months since the operation.

DR. GRISWOLD.—I have recently seen a case where the kidney was removed and it was expected that a secondary development would be found. In that case the right kidney was operated upon; it was a floating kidney; it was anchored, but unsuccessfully, and a pyelitis developed which was found to be tuberculous. She has developed temperature and a hacking cough. The chest examination does not yet show much.

DR. LE ROY BRÖUN.—In connection with the paper, with the idea of furthering rather than adding to the discussion, I wish to report a case that came under my own care a short time ago. The patient first came to the hospital with non-purulent tubo-ovarian disease of the right side. An abdominal section was done, more with the idea of conservatism, and the ovary and tube of the right side were removed. Recovery was uninterrupted. The temperature was normal until about the eighth day, when it began to go up. A mass was recognized on the left side at the site of the kidney. The urine examination being negative before the operation, and the patient being of a constipated habit, this mass was at first thought to be a fecal impaction. The bowels were thoroughly moved, but no improvement in temperature was obtained, nor was the mass diminished in size. The condition being now clearly a pyonephrosis, under anesthesia the pelvis of the kidney was opened and about a pint of pus evacuated. I mention the case on account of the rather unusual surroundings. I did not pass a catheter into the ureter, because I feared that the ureter might have become thinned from an apparently rapid purulent accumulation. This I expect to do later, and to determine the origin of the obstruction, if possible. There

was plenty of pus in the bladder at the time of the operation. I am yet at a loss to learn how the pyelitis developed. I feel that this might be of tuberculous origin; possibly, by passing a catheter, I might find an obstruction. It is an unusual case following uncomplicated abdominal section.

DR. E. E. TULL.—How soon after the operation did pus appear?

DR. BROWN.—About the ninth day the temperature rose, which I attributed at the time to indigestion and toxemia from the retention of the fecal matter.

DR. A. PALMER DUDLEY.—In regard to the question of examination of the kidneys. I should like to say, in the first place, it may be done for diagnostic purposes. We all know that for a time Kelly's method has been used by the general surgeon or gynecologist for testing the kidneys. Harris, of Chicago, has invented an instrument easier to use and better in results. Even with Harris' instrument, which collects the urine from both kidneys, is it sufficient to show you a stricture of the right ureter? No, certainly not. It may serve to indicate the presence of tubercle bacilli in the urine from the right kidney. Now, another question: Do we know how the majority of the cases of inflammation of the kidney of the character reported come by it? And right here I should like to ask the question if you know whether or not the majority of the patients who show this condition of kidney irritation are patients who suffer from prolapse or procidentia of the pelvic structures to such an extent that the bladder pockets the urine, which then decomposes. If a patient with a cystocele sufficiently large to allow residual urine makes an effort at urination, the ureter becomes more or less dilated. One or the other or possibly both ureters become inactive, and the lower portion of the ureter becomes funnel-shaped and dilated. If the woman does not completely expel her urine the residual urine decomposes—*i. e.*, there is ammoniacal decomposition; bacteria get in; the efforts at urination cause a regurgitation into the dilated ureter, which is followed by an ascending ureteritis. In that way a pyelitis develops which is not primary. First there is a cystitis, then a dilatation of the ureter, then an ascending inflammation from bacterial infection, and then kidney complications. Provided, in Dr. Janvrin's case, that had not been a tuberculous condition, but a simple inflammation of the kidney, would it not have been good surgery to enlarge the incision and excise the stricture? Would it not be good surgery to do plastic work, restoring the base of the bladder so that there shall be no residual urine and an ascending inflammation result? I have had such conditions under my care, and I am absolutely sure that they were due to efforts at urination. The bladder becomes affected and loses its tonicity, the ureters are open, residual urine follows, then ammoniacal decomposition from bacteria, then regurgitation into the ureters and inflammation is the result. I think this is one of the most instructive papers ever read before this Society.

DR. L. GRANT BALDWIN.—Certainly the report of this case

is extremely interesting to us all. Regarding the idea of Dr. Dudley, I wish to refer to two cases of pus kidneys seen recently. One was in a married woman who had never borne children and who had no injury to the pelvic floor or injury to the wall of the vagina. The trouble began apparently from uric acid calculus. Tubercle bacilli were found. Evidences of cystitis followed pain in the side. There had been no antedating cystitis. The other case was a girl of 17 years. She had a cystitis which antedated the pain in the side, but there was no reason for the presence of residual urine. It is a question in my own mind whether urine can be regurgitated. There is a fairly constant flow of urine, and it will require investigation to learn how much force is necessary to cause regurgitation of urine into a healthy ureter of a secreting kidney.

Referring to Dr. Broun's case, it does not seem possible that eight ounces of pus could develop in nine days; I am inclined to think that pus in the ureter had been overlooked rather than that it had developed in so short a time after operation.

DR. LE ROY BROUN.—I was rather surprised at Dr. Dudley's statement in reference to cystitis following a cystocele and his explanation of ascending trouble into the ureter. I have never seen a case of cystitis attending a cystocele, and it has often been a source of wonder to me why irritation of the bladder did not occur in cystocele, even when it was pronounced. I cannot agree with the explanation of the formation of pus kidneys. It has never been my experience and I have never seen a case of cystitis accompanying a cystocele. Patients do not, as a rule, complain of vesical irritation. Their chief complaint is rather their inability to hold urine, voiding it at every cough or sudden jar of any kind.

DR. JOSEPH E. JANVRIK.—I have had considerable experience in observing cases of cystitis, and, like Dr. Broun's, it has been that there is more or less inability to retain the urine, which has been voided without difficulty. The great difficulty is to retain it. Reasoning from that point, I doubt whether the bladder is often distended to such an extent as to press the valves back out of position and so carry this infected urine into the ureters. The point brought out by Dr. Baldwin as to the constant current of urine coming down from the kidneys would militate against it. For that reason I think that, although there may be some cases in which we get an inflammation of the lower portion of the ureter, it is stretching a point to say that cystitis itself is a *very frequent* cause of inflammatory trouble in the pelvis of the kidney. In regard to the case of my own, the diagnosis pointed apparently to disease of the right kidney, probably an impacted calculus; the pain began there and remained there, and it was only at times that it passed down into the bladder, and then only late in the history of the case. Furthermore, during the attacks of kidney colic small uric acid calculi had been found in the urine. They were small, to be sure, but there were several of them. The point that interested me more than anything else during the operation was the condition of the interior of the pelvis, which

to the naked eye looked healthy, but still was slightly eroded; these erosions had been caused by the irritation of the calculi which had undoubtedly existed there. Thinking the matter over for a few moments and talking to Dr. Torek, who assisted me in the operation, I ventured the remark that some more serious trouble might exist than that which had been caused by the local irritation. Moreover, there is one point which I neglected to mention in the paper. The patient had an older sister who had died of tuberculosis of the lungs. I think that was the only case in the family. The patient was a small, slightly built young woman of 25 years of age. The uterus and ovaries and tubes were normal. Therefore, thinking hurriedly over the case, I said there was something back of what appeared to the naked eye, and, inasmuch as the ureter was practically occluded and the kidney diseased, I am going to take it out and submit it to further examination, because if I back out now I will leave the patient in exactly the same condition in which she came into my hands, with a partially obstructed ureter six or seven inches below the kidney, and the kidney itself diseased; and altogether I knew it was an unpleasant position in which to leave the patient. Knowing that the left kidney was perfectly healthy, I thought it was decidedly best for the patient to be relieved of the other, which was certainly in a diseased condition.

Another point of interest arose in talking with Dr. Meyer. He stated that it was very unusual, as far as his observations and reading went, to find tuberculous deposits coexisting with uric acid concretions. The result of the examination of the kidney showed there was a tuberculous infiltration, and proved that I did the best possible thing when I took the kidney out. If the patient had been stronger I should have prolonged the operation and removed portion of the ureter. I thought it better to desist when I did. She has since been in perfect health.

Official Transactions.

CLARENCE REGINALD HYDE,
Secretary.

TRANSACTIONS OF THE WASHINGTON OBSTETRICAL AND GYNECOLOGICAL SOCIETY.

Stated Meeting, January 17, 1900.

The President, S. S. ADAMS, M.D., in the Chair.

DR. J. T. JOHNSON showed

TWO SPECIMENS OF DISEASED OVARIES AND TUBES.

The first case had been ill five years, supposedly from malaria with hysteria and neurasthenia, which required large

quantities of bromides and morphia. When he saw her she had been in bed for a month, having pain all the time, and had not taken food for several days. Examination showed enlargement on one side of the uterus. The husband and patient were very anxious to have both ovaries removed. He found a beginning ovarian cyst of one side with diseased tube. The other ovary might have been left under some circumstances.

The second specimen was of cystic ovaries and diseased tubes. One ovary had a cyst two or three times as large as a normal ovary.

DR. I. S. STONE said the question of so-called conservative surgery was continually coming up in these border-line cases. Some men are not inclined to remove such ovaries, but the brilliant results sometimes obtained by their removal make us think that we may be too conservative. We might be led to *criticise*, judging from the size of the organs, without knowing the existing conditions.

DR. W. M. SPRIGG asked what had been the result if these small cysts were left. If the cysts are not large is it not better to leave them after puncturing and letting out the contents?

DR. JOHNSON answered that the very best results were obtained from puncturing and curetting out these cysts as large as a pea, but he thought from the symptoms that it was better to remove the specimens entire, especially in so large a cyst. It would take longer to do the conservative work, and the patient was not in good condition and had just had a trachelorhaphy.

DR. SPRIGG said he had seen Kelly squeeze out quite large cysts and drop the ovary back into the pelvis. He had scraped out quite a large cyst and the patient had remained well.

DR. STONE spoke of Goodell's method of rupturing the small cysts under anesthesia by bimanual pressure. He had done it at the Columbia Hospital. Great care must be taken that no infectious material is present.

DR. JOHN F. MORAN read the paper, entitled

PUERPERAL ECLAMPSIA.¹

DR. W. S. BOWEN said, since patients had begun to engage their physicians so early in pregnancy, a practitioner almost considers himself guilty if he has a case of eclampsia in private practice. In hospitals many come in in convulsions from the lowest walks of life, no attention having been given them until this condition is present. He had spent about three years in a hospital in Baltimore, and it was common for patients to be brought in in convulsions and in labor, which led him to believe it to be a very frequent disease, but he has not had more than five cases in ten years of private practice, and two of these were in consultation. Convulsions frequently occur

¹ See original article, p. 341.

with no edema or albumin present. He cited a case which he had watched carefully, and was called suddenly to find her in convulsions. He delivered with forceps. Two years after she was delivered normally and convulsions occurred after labor. She has had no kidney trouble since. Some cases have a remarkable degree of edema and no nervous symptoms, and the urine will be found to contain a sufficient amount of solids. Many physicians are too hasty in delivering the fetus. He is opposed to the violent dilatation of the cervix. If the cervix is not dilated the attention should be directed to eliminating the poison and controlling the convulsions, and the tissues will soften and the labor will be easy. The best remedy for the convulsion is chloral by the bowel, sixty grains. During the convulsion the respiration is bad and no chloroform is inhaled just when it is needed. Morphia hypodermatically, one-half grain, with no atropine, is the next remedy. In eliminating the poison croton oil may be given, and, while waiting, the subcutaneous injection of salt solution should be done. Delivery may be effected by forceps or version.

DR. W. M. SPRIGG said the quantity of solids in the urine is an index of the tissue changes going on in the body and should be determined. He objected to taking the percentage from a given specimen; it should be taken from the whole twenty-four hours' urine.

DR. CLIFTON MAYFIELD said he wished to emphasize what Dr. Bowen had said about chloral in large doses. The effect is to hasten labor; it seems to act as a uterine stimulant, almost like ergot. He recently used it in a most aggravated case. The cervix had dilated to the size of a half-dollar and the membranes had ruptured; after the chloral began to act the cervix was fully dilated in three-quarters of an hour, and she was delivered in fifteen minutes more. He has seen blood-letting do good.

DR. J. T. WINTER said when he first went into practice he had a large share of alley practice and a great many cases of convulsions. After delivery he found as a frequent cause a clot in the uterus. This he removed and gave half a grain of morphia. He has used chloral, but thinks morphia better. He thought sixty grains of chloral not an extravagant dose. He saw a case recently—a physician's wife. She came to him several times during the pregnancy and on the evening before the delivery, appearing perfectly well. She had a single convulsion; dilatation was nearly complete. Labor was quickly completed. After three hours she had another convulsion. There was no clot. He became fearful of hemorrhage and put his hand on the abdomen, and felt the uterus balloon out, and immediately she was dead. He saw another case with a physician. She had seemed perfectly well, but suddenly had several convulsions before the speaker saw her. She was easily delivered, and no more convulsions occurred until the next day, when she had another and died immediately. The patient's father had died of Bright's disease.

DR. J. T. JOHNSON suggested that air had gotten into the uterus in Dr. Winter's case and into the venous sinuses and so into the heart, causing instant death. He called attention to the treatment of eclampsia being so easily applied with the patient unconscious, croton oil on the tongue, and chloral by rectum, etc.

DR. J. F. MORAN said he always made the urinary examination from the twenty-four-hour specimen, taking into consideration the amount passed. Flaxseed poultices and also veratrum viride had been used at the Columbia Hospital, but he likes the chloral best. He uses chloroform to anticipate the seizure.

BRIEF OF CURRENT LITERATURE.

OBSTETRICS.

Puerperal Septicemia.—Harcourt Gervis¹⁰ reports a case of this variety successfully treated by antistreptococcus serum. He believes that no one should be satisfied, when treating a case of puerperal fever, unless, in addition to the ordinary methods of treatment, he employs also the use of the antistreptococcus serum, beginning its use as early as possible.

Eclampsia.—A woman seven and one-half months pregnant is reported by Maygrier and Chavane² as entering the Clinique Tarnier at 11 A.M. with no albumin in the urine. At 2 A.M. next day increasing dyspnea; at 6 A.M. vomiting, diarrhea, eclamptic convulsion, urine containing albumin. After three more convulsions rapid delivery with forceps. Increasing cyanosis, death at 9 A.M. Autopsy showed hemorrhage into the floor of the fourth ventricle, especially at the origin of the pneumogastric nerves.

A. Boissard¹¹ reports a similar case of eclampsia with cerebral hemorrhage.

Two cases of eclampsia treated by rapid dilatation of the cervix and delivery form the basis of a paper by L. Dubrisay.¹¹ Both mothers and one child were saved. Dubrisay advocates this method of treatment in cases of eclampsia when the child is viable.

Intrauterine Respiration.—Bufnoir and L. Demay² describe a case of twin pregnancy, first child born normally, second died during labor from separation of the placenta. Embryotomy was performed. Autopsy showed the right lung unaerated, the left pink and completely aerated.

Intrauterine Transmission of Vaccinal Immunity.—Experiments upon 66 mothers and fetuses by Bécclère, Coulomb, Chambon, and Ménard¹² show that the antivirulent substance in the maternal blood may traverse the placenta and enter the blood of the fetus. Immunity to vaccinal inoculation was observed in only those infants whose mothers possessed this immunity, and but a small number of such women transmitted

it to their offspring. Further, even though the blood of both mother and child possess antivirulent qualities, the child may still be inoculable with success with vaccine virus, although this occurs more rarely than when the child's serum is not antivirulent. From these observations the practical conclusion is drawn that vaccination of pregnant women with vaccine of known virulence, even during the last months of pregnancy, and however many and successful the inoculations, does not assure the intrauterine transmission of vaccinal immunity to the child, or gives only an immunity of uncertain and brief duration. During epidemics of variola, however, the vaccination of all pregnant women is necessary.

Cordes¹⁸ records the following case: A husband, having been among cases of variola, carried the disease to his wife, who was more than eight months pregnant. The child was born with varioliform pustules, and was vaccinated during its early months and three times subsequently without success. After reaching adult life death occurred from variola.

Polyuria in Pregnancy.—William Krusen¹⁹ cites a case of this variety. The polyuria became noticeable during the last two months of pregnancy, and the excessive thirst and frequent desire for urination caused the patient much discomfort. He gives the measurements made of the urine during the last twelve days of pregnancy; the amount varies from 234 ounces to 82 ounces. With the polyuria there were great thirst and some edema. The urine was of low specific gravity and contained no albumin and sugar. At labor the woman was delivered of two male children, both normal; a very large amount of amniotic fluid was present. The definite relation of affections of the nervous system and temporary increase in urinary secretion is a well-known fact. Polyuria has been noted in connection with abdominal tumors, especially when in the vicinity of the celiac plexus, and also as an accompaniment of chronic and inflammatory processes in the same region; so possibly in the instance herein described the extraordinary pressure on the celiac plexus, due to the twin pregnancy, may have produced a similar result.

Placental Transmission.—W. A. N. Dorland,²⁰ after reviewing the literature of placental transmission of drugs and specific diseases, is able to set forth the following conclusions: 1. While many drugs may be administered to the mother without any noticeable effect upon the fetus, there are certain substances that show a special tendency to traverse the placenta, and, entering the feto-placental circulation, exert a positive influence for good or evil according to the condition that may be present in the given instance. 2. Maternal medication, therefore, is indicated in certain conditions, either in order to prevent the development of a similar condition in the fetus or to counteract the effect of germs and their toxins already introduced into the fetal economy. 3. The drugs that have been found to affect the fetus *in utero* are notably opium, mercury, copper, lead, arsenic, and the iodides. In

appropriate doses they may be administered to the mother in suitable pathologic conditions with beneficial results to both mother and child. 4. Any morbid influence acting upon the mother either acutely, as in the case of the exanthemata, or more slowly, as in tuberculous and specific infection, will react deleteriously upon the product of conception, and either destroy it through its overwhelming toxic action or render it feeble and less resistant to subsequent and post-natal invasion, or the disease will run an atypical course *in utero* with or without apparent vestiges at birth. 5. The entrance into the fetal structures is accomplished through the agency of the fetoplacental circulation. It is probable that access is gained through bacterial action, the germs rendering the placental villi less resistant to invasion, whereby both the microbes and their toxins pass the natural barrier at the chorio-decidual junction. 6. As a rule, the infectious diseases do not manifest their characteristic visceral lesions in the fetus, probably because of the passivity of these organs during antenatal existence. The germs, however, may be detected in large numbers by bacteriologic and microscopic examination.

Infection of Liquor Amnii and Fetus before Rupture of Membranes.—Perret¹² records a case in which pregnancy had been apparently normal and the first stage of labor was progressing when the fetal heart sounds became slow and feeble. Dilatation of the cervix was artificially completed and the membranes ruptured, allowing the escape of a green, fetid liquid. The child was delivered by forceps and resuscitated with difficulty. Placenta and membranes normal. An intrauterine douche of bichloride was followed by a normal puerperium. The child took the breast of the nurse badly, its skin became bronzed, stools fetid, urine red and scanty, and it lost weight. Fifteen days after birth there was severe hemoptysis. After a gelatin injection, the next day hemorrhage from the puncture could be controlled only by strong pressure. The hemoptysis recurred and death followed. Although no culture or autopsy could be obtained, Perret regards this as a clear case of intra-amniotic infection.

Ectopic Pregnancy.—C. E. Manierre and M. Herzog⁹ report two cases of ectopic pregnancy. In one the probable diagnosis of ectopic gestation was made and the patient operated upon, and an unruptured tube removed containing a seven-weeks-old fetus. There were almost no adhesions and the operation was performed with perfect ease. The other case was similar, an unruptured tube being removed; it contained a five-weeks-old fetus. It appears to Herzog that the most frequent primary cause of disturbance of the nutrition of the ovum and of the interruption of tubal pregnancy is neither rupture nor abortion, but hemorrhage from the tube wall or gestation sac into the intervillous space.

J. B. Hellier¹⁵ describes a case of extrauterine gestation which ruptured at mid-term and was operated upon the next day. At the time of operation the patient was almost pulseless. Recovery satisfactory.

Cesarean Section.—Thomas Kittredge⁶ reports a successful Cesarean section. Both mother and child are doing well.

A. Routh³² describes a Porro-Cesarean hysterectomy with retroperitoneal treatment of the stump in a case of fibroids obstructing labor.

E. Cestan and Payran⁷ report a Cesarean section for asymmetrical pseudo-osteomalacic rachitic pelvis with a false conjugate of 88 millimetres. The beginning of labor was chosen in order to avoid uterine inertia. The median abdominal incision was, in two-thirds of its extent, above the umbilicus, to diminish the chance of post-operative eventration. The uterine incision was median and high up, avoiding the arterial circle of the lower segment; the feet of the fetus presented in the wound, aiding extraction. The suture should be the same as for other hollow abdominal viscera. Rapidity of operation is particularly urged as affording the surest means of avoiding hemorrhage, shock, and infection.

Albuminuria of Pregnancy.—Coudray⁸ writes that albuminuria of pregnancy is usually a sign of general autointoxication. He holds that pregnancy should never be interrupted on account of its existence until a strict milk diet has been tried. If this fails to relieve in eight days the symptoms of severe albuminuria, induction of labor may be necessary in the interest of the mother, whether the fetus is viable or not.

Non-ligation of Placental End of First Cord in Twin Pregnancy.—Utilizing cases recorded at the Baudelocque Clinic, where the placental end of the cord of the first fetus in twin pregnancies has not been tied since the year 1898, Aubert⁸ argues that this precaution is unnecessary and a waste of valuable time. In spite of the anastomoses between the fetal circulations, no hemorrhage of any account has occurred, he states, at the Baudelocque Clinic, as a result of the omission.

Dystocia due to Uterine Fibroids.—G. Lepage¹ reports a case of pregnancy at term in a fibroid uterus, with the fetus in transverse position and the placenta inserted in the lower segment of the uterus, entirely obstructing the cervical canal. During a severe hemorrhage due to the placenta previa, the Porro operation was performed and mother and child saved. A previous labor had been terminated by forceps on account of severe hemorrhages connected with placenta previa.

Parturition complicated with Suppurating Fibroids.—E. H. Stevens¹⁷ describes a case of fibroids complicating pregnancy. The pregnancy went to term and the child was born in every way normally. After delivery, for twenty-four hours she was comfortable; then septic symptoms set in, and hysterectomy was performed on the seventeenth day. The patient died on the twenty-fifth day.

Concealed Accidental Hemorrhage.—A. E. Larking¹⁵ discusses two cases of accidental hemorrhage. One woman was 33, the other 37; both were multiparæ; in both the hemorrhage occurred suddenly without obvious reason; both were delivered of dead children. One recovered.

Pregnancy occurring in connection with Myofibromata.—A. J. C. Skene¹⁴ classifies myofibromata of the uterus in relation to child-bearing as follows: 1. Submucous tumors, large or small, cause sterility as a rule (Skene has seen only one exception). 2. Small subperitoneal tumors do not always cause sterility nor complicate child-bearing to a very dangerous degree. 3. Interstitial tumors, unless so small that they cannot be detected, and large subperitoneal tumors closely connected with the muscular tissue of the uterus, do not cause sterility in all cases, but are most dangerous complications of gestation, because they predispose to miscarriage and render delivery always difficult, often impossible, and always exceedingly dangerous.

In discussing the treatment of these conditions Skene leaves out of account the first class. The second class requires attention in the first months of gestation, in order to keep the uterus in position and aid in its escape from the pelvis up to the abdominal cavity; and, finally, they may require help in delivery and special protection from postpartum hemorrhage. The third class demands hysterectomy as the surest means of saving them. Extremely conservative practitioners might argue that because a few escape with their lives all should be permitted to take the risk of miscarriage. But in opposition to this is the fact that those who live through a miscarriage are few, and these are left with their tumor, which always impairs health and usefulness, and many of them eventually require hysterectomy to save their lives.

The time to operate in cases which require hysterectomy is still a question for consideration. In general terms it may be stated that when gestation has been diagnosticated in cases of the third class given above, the operation should be done. There are those who refrain from sacrificing a living embryo or fetus for any reason or purpose, and Skene is guided by this principle himself to a degree. Therefore hysterectomy should not be undertaken until there is evidence that the product of conception is no longer living. According to his observation, the embryo died some time before the end of the fifth month, and when in consequence of this the first indications of a miscarriage appear, then is the time to operate.

Uterine Myoma complicating Labor.—R. Blondel¹⁵ was called to see a case in which forceps had been unsuccessfully applied three times. After administering quinine sulphate, a forceps delivery was accomplished, and a tumor was then felt attached to the right posterior portion of the lower segment of the uterus. This he considered a myoma, and he believes that it contracted forcibly after quinine had been given, thus diminishing the size of the obstacle so that rotation of the shoulders could occur. Three weeks later the tumor had disappeared, whether by expulsion or absorption is unknown.

Treatment of Spontaneous Rupture of the Uterus.—Weiss and Schuhl¹ draw their conclusions from two cases of spontaneous rupture of the uterus during labor. In both cases

the rupture was complete, and in both they terminated labor as rapidly as possible by bringing down the feet. In the first the child had been dead forty-eight hours before operation, and infection led to death from general peritonitis in spite of an abdominal hysterectomy. In the second case there was complete rupture of the uterus, with a peritoneal tear extending to the kidney, but a Porro operation was performed within eight or nine hours after rupture occurred, and recovery followed. The writers urge rapid termination of labor when signs of rupture of the uterus are discovered. If the rupture is very small, one may temporize, otherwise laparotomy should be performed promptly. If the lesions are extensive and severe, supravaginal hysterectomy is to be preferred on account of its rapidity and less shock than in total abdominal hysterectomy. The latter should be reserved for cases in which the lesion is too low to allow fixing the pedicle in the wound and the general condition is sufficiently good. If the general condition is extremely bad the pedicle may need to be left in the abdomen and drainage employed.

Retraction of Bandl's Ring.—It is stated by J. Veit² that retraction of Bandl's ring is accompanied by contraction of the rest of the uterus, and that it will not yield to forced dilatation. No treatment is indicated except narcotics. After waiting a variable time, which may be only a few hours, the retraction and contraction disappear simultaneously.

Myomectomy.—E. R. Lewis¹⁸ reports a case of myomectomy performed on a woman six months pregnant. The pregnancy went to full term and both mother and child are well.

Uncontrollable Vomiting of Pregnancy.—G. Mons¹ is convinced by the study of 25 such cases that, in addition to those cases which are apparently due to an autointoxication of pregnancy, there are others in which the vomiting is due, if not to hysteria, at least to an increased excitability of the nervous system under the influence of pregnancy.

H. S. Knight⁴ cites a case of pernicious vomiting of pregnancy which resisted all treatment usually used in such cases. It was discovered that an antelexion existed. An attempt was made to straighten this by packing the vagina, but was unsuccessful; a ball pessary was next tried, but this proved too irritating, and a soft-rubber pessary was used. This proved successful, and the vomiting ceased after about one week.

Use of the X-ray during Pregnancy.—Bouchacourt⁵ has found the X-ray thoroughly unsatisfactory in its application to the study of the fetus *in utero*. He finds by his experiments that the factors which interfere with vision of the fetus include liquor amnii, membranes, uterine wall, respiratory and voluntary movements of the mother, movements of the fetus, opacity of the maternal pelvic and vertebral bones, inequality of distance of different portions of the uterus from the plate, and unequal thickness of different portions of the tissues traversed by the X-ray.

Effect of Hysteropexy upon Pregnancy and Labor.—H. Schwartz²⁶ has performed abdominal hysteropexy 63 times with 2 deaths. Eight of these women subsequently furnished ten pregnancies, three of which ended in abortion. He holds that the small number of conceptions after the operation is due to lesions of the appendages rather than to fixation of the uterus.

Pinard²⁴ observed one of the above cases in whom spontaneous labor occurred at term, but in whom it was necessary to hold the head in place until expulsion began, as it remained above the pelvic inlet until then.

Criminal Abortion.—A. Brindeau² has seen a case in which some instrument had caused a transverse tear, two inches in length, of the posterior cul-de-sac of the vagina, and had then passed obliquely through the cervix, entering the uterine cavity. The uterus was emptied and the wound subsequently repaired. Recovery.

GYNECOLOGY AND ABDOMINAL SURGERY.

Sclerocystic Ovaritis.—This subject is discussed quite fully by A. Fraikin.¹ He considers that in the development of the pathological condition the cysts are secondary to the sclerosis. The symptoms he divides into functional, physical signs, and general. Functional symptoms embrace menstrual disturbances; very rarely amenorrhea; irregularities in menstruation; most frequently menorrhagia and metrorrhagia, often excessive; leucorrhea, probably due to metritis and salpingitis. Pain is the earliest and most pronounced symptom, at first accompanying menstruation and later also during the intervals, increased by fatigue and walking, diminished by rest in bed. It is drawing or stabbing in character, situated most frequently midway between the anterior superior spines of the ilii and the pubic symphysis, three finger breadths above the pubis. It is frequently bilateral, with unilateral lesions, or sometimes referred to the opposite side. The pains radiate toward the lumbar or sacro-iliac region, the thighs, inguinal region, buttocks, perineum, or coccyx. Coitus and defecation are often painful. Physical signs include local rigidity of the abdominal muscles; bimanual palpation shows an extremely tender ovary, which may be enlarged, nodular, freely movable or fixed by adhesions close to the side of the uterus, but separated from it by a groove, or occasionally prolapsed into Douglas' cul-de-sac. Anesthesia is frequently necessary for examination, on account of the great tenderness. General symptoms comprise digestive disturbances, gastric dilatation, habitual constipation; cardiac palpitation; neurasthenia with extreme depression and constant worry about the genital organs. Hysterical symptoms are also frequently present. Usually the presence of the above symptoms and physical signs, elicited by repeated careful examination, permits a diagnosis of sclerocystic ovaritis, but occasionally this is only made

after an exploratory operation. Medical treatment: rest, tonics, bromides, hydrotherapy. Opothrapy, douches, dressings, revulsives are ineffectual. Of surgical methods, resection and ignipuncture give better results than castration, are not more severe or more difficult, and avoid the post-operative effects of the last operation. Menstruation is preserved and pregnancy and normal labor may follow. If the lesions are very extensive, castration may, however, be the only feasible operation.

A Multilocular Ovarian Tumor.—F. A. Baldwin¹⁵ removed from a multilocular ovarian tumor at an autopsy 114 pints of fluid, and from a second cyst occupying the upper abdomen 28½ pints of fluid. At the base of the two large cysts were two smaller ones. The total amount of fluid obtained from the cysts was 18 gallons. The estimated weight was put at 185½ pounds.

Torsion of the Pedicle of an Ovarian Tumor.—A. Doran¹⁵ cites a case in which there was a chronic torsion on one side and an acute on the other. The patient was operated upon, and the pedicle with the acute torsion contained two twists and was very edematous and congested. The other pedicle was twisted twice and in an atrophic condition. The patient complained of no unpleasant symptoms after the operation.

Cysto-epithelioma of Ovary.—Boursier³³ reports the removal of an adeno-cysto-epithelioma of the ovary which had been diagnosed uterine fibroid on account of metrorrhagia, rapid increase in size of the tumor, unusual depth of the uterine cavity, hardness of the inferior and anterior portions of the tumor, and transmission of the movements of the latter to the uterus, to which it was attached by a broad but short pedicle.

Retroperitoneal Lipoma.—William Gardner and J. G. Adami¹⁶ report two retroperitoneal tumors occurring in the same case. One was a lipoma myxomatodes situated below the left kidney and weighing 3½ kilogrammes. The other tumor was smaller and situated lower down; it was an osteoid chondro-myxo-fibroma. Both tumors were successfully removed, the patient making an uneventful recovery.

Interligamentous Tumors.—G. Calderini³³ says that there are four varieties of these tumors: 1. Those which originate in the broad ligament from embryonal remains contained within it (parovarian cysts, cysts of Gärtner's canal, tumors from cells of wandering suprarenal capsules, tumors of the round ligament, lymphatic ectasies).

2. Tumors which develop primarily in the pelvic connective tissue: (a) dermoid tumors, fibroma, fibromyoma, sarcoma, lipoma, (b) dermoid cysts and teratoma.

3. Tumors which develop in the pelvic connective tissue, but which originate in some of the neighboring organs. (Uterus: subserous fibroma or fibrocystoma developing within the ligaments. Ovary: cysts and solid tumors.)

4. Tumors which infiltrate into the pelvic connective tissue, forming nodes or cords, due to direct propagation or regional

metastases, and originating in neighboring organs (carcinoma of the uterus, rectum, bladder, ovary; tuberculosis choriodeciduoma, vesicular degeneration). To these we may add: (a) ectasy of the pelvic venous plexuses and hematoma, (b) parasitic forms, *ecchinococcus*, *actinomycosis*, (c) anomalies in development of uterus and vagina, (d) ectopic pregnancy, (e) tumors of the bones and soft parts of pelvis, and teratoma of sacrum and coccyx, (f) cystic dilatation of ureters and bladder. The radical cure of these tumors consists in their removal.

Cysts in the Abdominal Wall.—John Homans,⁶ while operating upon an ovarian tumor of large size, was surprised to find a large cyst in the abdominal wall in the epigastric region, entirely distinct from the ovarian tumor, but of the same character. At a later period the patient was examined and several distinct cysts were found, varying in size from a horse chestnut to an orange. One of these cysts was removed and sent to the pathological department of Harvard College, and the following report returned: "Of abdominal wall, microscope shows a dense fibrous tissue and fat and muscle, with a small area of more cellular fibrous tissue in which appeared epithelial structures of the type of ovarian cyst-adenomata; a single layer of cylindrical cells forming irregular gland acini—malignant cyst-adenomata of ovary."

Myomectomy per Vaginam.—J. R. Goffe²⁰ believes in myomectomy in all cases where it is practicable. The superiority of the vaginal method over the abdominal in meeting fibroids is the same as that which attaches to all vaginal work: the dangers are less, the convalescence is smoother and simpler, there is no visible scar, and, above all, there is no danger of hernia. The size of the tumor which can be removed per vaginam depends on the experience and facility of the operator. After the incisions are made opportunity is afforded to decide whether a myomectomy or a hysterectomy is indicated; if the latter, the steps already taken are essential and no time is lost. He cites three cases of myomectomy per vaginam, all of which were successful.

Uterine Fibroids.—M. H. Richardson¹⁹ advises early operations in the young, in order that the uterus may be saved by limiting the operation to removal of the tumor itself. Early operations permit the enucleation of small fibroids in a large percentage of cases. Moreover, he is convinced that the dangers of myomectomy, when it is feasible, are even less than those of hysterectomy. The only objection to early operations is that they are not at the time necessary.

Primary Carcinoma of Fallopian Tube.—Elizabeth Mercelis²¹ reports a case of primary carcinoma of the Fallopian tube. She bases her diagnosis on the following points: The absence of malignant growth in the uterus; the presence of an old salpingitis, together with the freedom of the inner end of the tube from malignant change; an enlarged tube, the lumen of which was filled with carcinomatous tissue; the

advanced stage within the tube and the fairly healthy condition of the outer muscle. The ovary was small and at its inner end free from the growth; the outer portion was widely invaded, but even here there were areas of ovarian tissue. Microscopical evidences showed the growth to be more rapid in the ovary than in the tube.

Primary Carcinoma of the Vermiform Appendix.—H. D. Rolleston²³ reports a case of primary carcinoma of the appendix occurring in a woman 26 years old. The patient was operated on for appendicitis. She had had three other attacks, the first being one year and three months ago. Microscopic examination showed that the appendix was the seat of a spheroidal-celled carcinoma. The growth was greatest in the mucous membrane and could be traced outward into the muscular coat. The peritoneal surface was not involved.

Primary Carcinoma of Body of Uterus.—B. Bonte²⁴ describes 2 cases of primary carcinoma of the body of the uterus successfully operated upon with reference to immediate results, one by abdominal, the other by vaginal hysterectomy. In the latter case the uterus was small and limited, and the lesion appeared limited. He therefore opposes the adoption of an absolute rule that cancer of the uterus demands operation by the abdominal route.

Abdominal versus Vaginal Hysterectomy for Uterine Carcinoma.—J. B. Deaver²⁵ states that the abdominal operation is preferable because it gives a better area for complete extirpation of carcinomatous tissue, also that it lessens the danger to the ureters. Ureteral catheterization is unnecessary. There is undoubtedly greater danger of hemorrhage in vaginal hysterectomy for carcinoma. It is simply the increased facility for seeing the locality of the hemorrhage that gives the advantage to the abdominal method. The better command of the field of operation secured by the abdominal route makes the placing of ligatures on the vessels so much more accurate and secure that subsequent hemorrhage is not only less liable to occur, but as a matter of fact is a very rare accident. There is also less danger of infecting the peritoneum. After the abdominal operation there is less danger of prolapse of the bowel.

Vaginal hysterectomy is an operation which presents no special difficulties in the class of cases to which it is applicable. It is applicable only in those cases where the carcinomatous process is confined strictly to the vaginal portion of the cervix, the cervical or uterine canal, and where the uterus is freely movable. In cases where there are adhesions fixing the organ, or where there is or has been inflammation or fixation of the appendages, the abdominal operation is safer, easier, and a more rational procedure. Any enlargement of the uterus vastly increases the difficulties of the operation and offers another objection to vaginal hysterectomy.

Relative Value of Vaginal and Abdominal Operation in Extirpation of the Pelvic Organs.—L. Gustave Richelot²⁷ states that in uterine fibromata the two methods have an

equal value; each one has its indications, but the upper route is the most often indicated. The vaginal hysterectomy can no longer to-day claim the same superiority as formerly. In cancer of the uterus vaginal hysterectomy is superior to every other method; it permits us to obtain, in a proportion of not less than ten per cent, prolonged survival, and even cures which seem to be final. The best operation is that which precedes cancerous infiltration, and not that which pretends to pursue it through the pelvic cavity. Abdominal hysterectomy is an extra resource in a very limited number of cases, but applied deliberately to invading cancers it is an imprudence, and for limited cancers it is an illusion. In pelvic suppurations the conduct to be used is variable and responds to complex indications; improvements of technique have given a great value to the suprapubic method, which ought to be preferred in certain cases. But most frequently, when the surgeon is sure of his diagnosis, if he wishes to give his patient the greatest security and the least suffering, vaginal hysterectomy is the method of election.

Fibromyoma of the Round Ligament.—A case of fibromyoma of the round ligament accompanied by uterine fibromyomata is described by A. Claisse.¹ After microscopical study of the tumor in the round ligament, he concludes that fibromyomata of the abdominal portion of the round ligaments are analogous to those of the uterus in structure and mode of evolution, and they are pathogenically identical. Their development occurs by a similar process of inflammatory perivascular proliferation.

Uterine Sclerosis and True Metritis.—L. G. Richelot²⁷ would confine the use of the word *metritis* to inflammatory conditions due to infection. Uterine sclerosis, however, may without any infective cause develop from the age of puberty in nervous, arthritic patients with a tendency to congestion, in virgins, in women who have gone through labor normally and without a trace of fever, and in those approaching the menopause. Pathological anatomy shows the difference between an infected uterus with soft and friable tissues, thickened and granular mucous membrane, destroyed epithelium, infiltration with embryonal and migratory cells, and atrophied muscular fibres, and the sclerotic uterus, increased in size, with enlarged, non-ulcerated cervix, hypertrophied but healthy mucosa, indurated walls which are lardaceous or spongy but not infiltrated with leucocytes, perivascular hyperplasia of the connective tissue, with hyperplasia of the unstriated muscle fibres. To the latter category belongs the so-called metritis of young girls, which is a congestive and nervous condition of the pelvic organs preceding uterine sclerosis.

True metritis is due to infection. That of the fundus is seen following a recent labor and accompanying grave lesions of the appendages. Chronic metritis is a cervical metritis. Gonorrheal metritis is also a cervical metritis.

As to treatment, in the case of the nervous, arthritic affec-

tions we may use hot injections, tampons of glycerin, hydragris, and viburnum, baths, douches, uterine massage—whatever, in fact, will tend to reduce congestion. Hygiene and diet are of importance. The curette and caustics are of use in the hemorrhagic forms, especially when there are fungous growths. Amputation of the cervix, with ligature of the uterine blood vessels to cause atrophy of the body of the uterus, and vaginal hysterectomy, are final resources in case of persistent neuralgias and excessive irreducible hemorrhages. In the case of true metritis treatment must differ according to the cause. In the case of gonorrhea it must be directed to the cervix. In case of recent puerperal infection to the mucosa of the fundus, in case of chronic metritis to the cervix alone, operation is effective, but not all patients will consent to an operation. The author has great faith in an old remedy which has fallen into disuse, but which is sure to succeed; it destroys the deep, glandular lesions, restores the cervix to its normal size and shape, does not cause atresia, is not dangerous, and may be applied by any physician. This is the caustic *Filhos*, invented by Amussat, who solidified Vienna paste and let it flow into lead tubes. It is applied to the cervix very thoroughly until the mucosa is blackened and sanguinolent, the procedure lasting about five minutes. Absorbent cotton is placed in the posterior cul-de-sac to protect it from any oozing which might occur. A tampon of iodoform or salol is placed against the os for all dressing, and the patient must lie down all day, if possible, and on the following day may remove the tampon. Hot-water douches should be taken daily. She can pursue her usual avocations, being careful to avoid over-fatigue. The cauterization should be repeated every week, usually until cicatrization occurs. Should this delay, it is well to intermit treatment, to take it up again later, if necessary. The results in the restoration of the cervix to a normal condition are very remarkable.

Hematometra in Right Horn of Undeveloped Double Uterus.—F. W. N. Haultain¹⁰ reports a case of hematometra in one horn of an undeveloped double uterus. The patient was 24 years old and had never given any external signs of menstruation. She had been troubled with irregular paroxysms of pain in the right side. The case was supposed to be one of enlarged appendages with an atrophic uterus and its removal was undertaken. The abdomen, when opened, showed signs of previous general peritonitis. The pelvic swelling proved to be the horn of an undeveloped uterus distended with tarry blood, which had ruptured from the original sac and extravasated between the layers of the right broad ligament. The left horn of the uterus was patent and atrophic; the right horn was occluded and to a certain extent functionally active. The patient made a good recovery after the removal of her uterus. Haultain advises laparotomy and removal of the uterine sac in these cases.

Vaginal Hysterectomy for Uterine Prolapse.—R. C.

Chicken¹⁹ recommends the removal of a part only of the uterus and the removal of the unattached portion of the posterior fornix. In the state of complete prolapse the relationship of the bladder, ureters, and uterus is changed. The fundus of the uterus by its descent carries the posterior half of the bladder and the ureters with it, so that the posterior wall becomes the anterior. The anterior uterine surface and sides are covered by bladder and ureters. To guard against any accident in operating produced by this abnormal anatomy, a sound is passed backward and downward into the bladder as it lies exposed in front of the uterus. The continual dexterous manipulation of this by an assistant shows the limits of the bladder. By means of scissors the bladder is dissected off the sides and cervix of the uterus, the incision being in uterine tissue; the points are now turned sharply backward and the uterus cut across at the level of the cervix into Douglas' pouch. Two fingers of the left hand are passed through into the peritoneal cavity, the fundus of the uterus seized, retroverted, drawn down, and amputated at the point of peritoneal reflexion on its anterior surface, the broad ligaments having previously been seized with forceps and ligatured. There is now left attached to the base of the bladder a solid piece of uterine tissue. On the breadth and firmness of union which this is able to make will partly depend the success of the operation by resisting downward pressure in micturition and defecation; in short, it acts as a buttress in forming a new pelvic floor. The next step is to make a posterior fixed attachment for this stump. We find at this stage that there is left the cervix and os uteri hanging on to a long flap of mucous membrane and peritoneum, which is the stretched and useless posterior fornix; this is cut off by a pair of scissors close to the base. To this raw surface at the back of the pelvis the stump of uterine tissue is easily brought in contact after bleeding has been stopped. The parts are retained in position by gauze tampons.

Angiotribe in Abdominal Surgery.—Hugh M. Taylor,²⁰ before using an angiotribe, always has it tested by some competent mechanic. The secret of its success is in its strength and the accurate adjustment of its blades. It should not be used on omental or like fragile tissue. One should avoid handling or disturbing the attenuated stump after the clamp is removed. It is not necessary to cauterize the thin edges of the stump, except when there are infectious germs to destroy. As there is no oozing, no drainage is required. Compression of three thousand pounds for a minute or more should be practised in all vascular cases. In soft, edematous conditions there is the same danger as with the ordinary ligature. In applying on pedicles care should be taken to distribute the tissue equally within the bite of the forceps.

J. H. Carstens²⁴ advises the use of the angiotribe in the removal of small ovarian tumors, of diseased ovaries in the cul-de-sac, and of pus tubes which are between the uterus and rectum.

A Combined Recto vaginal Opening.—J. G. Mollin¹⁸ operated upon a woman 24 years old who was troubled by having a common opening for the vagina and rectum. He dissected up and brought the rectum down and back to its normal position. The operation was successful, the woman having control over her movements and a perfect vagina.

Influence of the Uterus upon the Bladder.—In view of the intimate vascular and nervous, as well as mechanical and topographical, relations of the uterus to the bladder, A. Vergely⁸ advises that in all cases of vesical trouble in women the uterus should first be examined and existing lesions corrected. Relief of bladder symptoms may be obtained in this way by curettage, uterine dressings, or pessaries, or at the time of menstruation by relieving pelvic congestion by diuretics, laxatives, hot baths, or even local bleeding.

Acute Pelvic Suppurative Processes.—C. G. Cumston¹⁷ believes that every suppurative pelvic collection that is accessible by Douglas' cul-de-sac is suited for posterior colpotomy and drainage. It is to be especially preferred to laparotomy and vaginal hysterectomy in every case where the patient is a young woman. This operation in no way hinders a later and more extensive operation if necessary.

Treatment of Syphilis.—J. F. Larrieu²¹ ardently advocates the treatment of syphilis in all stages by recently prepared tincture of iodine administered internally in doses of three drops daily a quarter of an hour before breakfast. This is continued for five to eight months during fifteen to twenty days of each month, reducing to fifteen after the fourth month, none being taken during the remaining days of each month. To this he adds a solution of sodium iodide. While praising the rapid cure by means of tincture of iodine, it is to be noted that the writer also cauterizes the initial lesion and acknowledges the frequent use of local mercurial treatment in all stages of syphilis as a supplementary measure.

Formalin as an Antiseptic.—G. E. Crawford³¹ believes that formalin comes nearer meeting all requirements of a perfect disinfectant than any other substance.

REFERENCES.

- ¹ Ann. de Gyn., Apr. ² Soc. d'Obst. de Paris, Dec. 21. ³ Thesis, Montpellier, 1899. ⁴ Bost. Med. and Surg. Jour., May 17. ⁵ L'Obst., Mar. ⁶ Bost. Med. and Surg. Jour., July 12. ⁷ La Sem. Gyn., No. 7. ⁸ Thesis, Paris, 1900. ⁹ Am. Gyn. Jour., July ¹⁰ Br. Med. Jour., May 26. ¹¹ Soc. d'Obst. de Paris, Feb. 15. ¹² Soc. d'Obst. de Paris, Jan. 18. ¹³ Soc. d'Obst. de Paris, Mar. 15. ¹⁴ Am. Gyn. Jour., June. ¹⁵ Br. Med. Jour., July 14. ¹⁶ Mont. Med. Jour., June. ¹⁷ Bost. Med. and Surg. Jour., July 19. ¹⁸ Jour. A. M. A., June 23. ¹⁹ Bost. Med. and Surg. Jour., July 5. ²⁰ Jour. A. M. A., Aug. 4. ²¹ Soc. d'Editions Scientifiques, 4 rue Antoine-Dubois, Paris. ²² Med. Rec., June 30. ²³ Lancet, July 7. ²⁴ Jour. A. M. A., July 21. ²⁵ Med. News, Aug. 4. ²⁶ Soc. d'Obst. de Gyn., de Ped. de Paris, Feb. 2. ²⁷ Ann. Gyn. and Ped. July. ²⁸ N. Y. Med. Jour., July 14. ²⁹ Jour. A. M. A., June 30. ³⁰ Br. Med. Jour., June 30. ³¹ N. Y. Med. Jour., June 30. ³² Lancet, July 14. ³³ Rev. mens. de Gyn., Obst. et Ped. de Bordeaux, May. ³⁴ Jour. des Sci. méd. de Lille, Mar. 3. ³⁵ Atti della Soc. ital. di Ost. e Gin., vol. vi., 1900. ³⁶ Ann. de Gyn. et d'Obst., June. ³⁷ Comptes rendus de la Soc. d'Obst., de Gyn. et de Ped., May.

DISEASES OF CHILDREN.

Acute Mastoiditis following Infectious Diseases.—J. W. Murphy² says that about 20 per cent of the children suffering from an infectious disease have, at some time during the course of the disease, an infection of the mucous membrane lining the tympanum and mastoid antrum, the mucous membrane lining these cavities being continuous with that of the nose and throat by means of the Eustachian tube, but there are good reasons for thinking that they may also be transmitted by means of the blood stream. If toward the close of an attack of one of the infectious diseases, especially measles or scarlet fever, there is a sudden rise of temperature together with great restlessness, especially marked at night, it indicates some new focus of infection. We should carefully watch the mastoid region. If upon inspection by means of a good light we find the drum membrane inflamed, especially in the region of Shrapnell's membrane, together with injection of the handle of the malleus, with restlessness marked as night comes on, we may feel reasonably certain that the middle ear is becoming involved. Pain on pressure over the mastoid, or swelling, will assist the diagnosis. Swelling or boggiess of the superior posterior wall of the external auditory canal near its junction with Shrapnell's membrane is a reliable symptom of involvement of the pneumatic spaces of the mastoid. For the relief of pain early paracentesis is indicated. Hot applications are usually more agreeable to children than cold. Poultices should not be used. The author has abandoned so-called germicidal remedies for plain sterilized hot water. He is very partial to broken doses of calomel at this time, because of its effect upon the primæ viæ and because when taken up by the blood stream the mild chloride does seem to possess germicidal properties. If, after the continuous application of heat or cold for thirty-six hours, there is still much pain and tenderness over the mastoid, with some fever, we are not justified in waiting longer, but should open up the mastoid cells by means of Schwartze's classical mastoid operation.

Can Children whose Growth is Slow or has Ceased be made to Grow further?—An editorial¹ on this subject says that a tall stature is not merely desirable from an esthetic standpoint, but that each person should have the height characteristic of his race. The age at which growth ceases varies with race, family, climate, nourishment, activity, and health. Some people continue growing until the thirty-fifth year. The Röntgen rays can give no information as to whether a child can grow any further, for where the body of a bone joins its extremity there is a zone which remains clear and transparent during the period of growth, and opaque when that period is ended. Within this zone is manufactured the bony substance, and when its functions are ended it becomes infiltrated with calcareous substance. Dr. M. Springer, of Paris, has just demonstrated the fact that by appropriate treatment growth

can be influenced. Many hereditary affections, as well as children's diseases, may cause alterations in the cartilaginous organ and interfere with its functions. Radiography will show whether this is the case. The treatment consists in drinking decoctions of cereals. Wheat, barley, oats, rye, corn, and bran are used in the proportion of two soup-spoonfuls of each to three litres of water, which is boiled for three hours or until reduced to one litre. It is then allowed to get cold, and is strained through a fine sieve. The solutions must be prepared fresh every day, as they ferment rapidly. This solution, which contains salts which have not been destroyed by chemical action, causes a rapid increase of size in dogs. The same result occurs in children. This drink is also useful in acute diseases, such as typhoid fever, replacing the mineral substances which are lost. Interference with growth is often accompanied by insufficiency of the digestive function. In many children the affection is not discovered, as the children do not complain even when the stomach is out of order and the liver somewhat congested. This condition may become chronic and still further interfere with growth. The digestive tract should be put in good condition before the cereal treatment is begun, otherwise the dyspepsia may be increased. Judiciously applied gymnastic exercises, especially those which expand the chest, should be instituted, for oxygen is an element in growth. The systematic administration of the fresh thyroid of sheep is another valuable medicament, but its effects must be carefully watched by a physician. Hygiene is of the greatest importance; gas from furnaces and stoves is to be avoided, and rooms should be well ventilated day and night. Hydrotherapy and saline cures are of use in many cases. A vegetable diet, with rice, semoule, macaroni, and eggs, should be given in abundance, meat in moderation, no alcohol. Impaired growth is sometimes due to hereditary or acquired disease, and treatment will vary according to the cause. In one case Dr. Springer, basing his theories upon the fact that the cartilaginous lower extremity of the thigh, which is two or three centimetres above the knee, is the most active organ of growth, instituted local excitation of this organ whenever its activity had become impaired. Friction, massage, applications of compresses soaked in salt solutions at night, were all tried, but the best result was obtained by local application of the electric current, which stimulated the ossifying power of the cartilage. Strange to say, this local action determined a general development of the whole organism, as if the centre presiding over growth had been stimulated.

Causation and Relative Frequency of Typhlitis, Perityphlitis, and Appendicitis in Infancy and Childhood.—Joseph Henry Byrne⁶ dismisses the first two affections by saying that in his fifteen years' experience he has yet to see a case of primary typhlitis or perityphlitis. As to appendicitis, the appendix varies more in size, position, and general make-up than all the other structures of the human anatomy.

In the early periods of life it is very rich in lymphoid tissue, and has been styled the tonsil of the intestines. The organ being a functionless, atrophied, and rudimentary one, with a blood supply that can be easily interfered with and which under healthful conditions seems barely sufficient, it must, therefore, be more or less susceptible, on account of its low degree of vitality, to inflammatory disturbances. Relatively the appendix is larger in fetal life, infancy, and childhood than it is in the adult; it reaches its maximum size between the tenth and twentieth years, and from here on it reaches a standstill or diminishes. This diminishing ratio is nothing more than a physiological or pathological retrogression, and with it goes a decreasing vascularity. As the tissues receive their nourishment through the blood, the slight immunity that exists in early life can be credited to the fact that these changes in the majority of cases are not sufficient to interfere with the integrity of the part until after the fifteenth year; and statistics support this assumption, as only 15 per cent of all cases of appendicitis occur prior to the fifteenth year. The female, both young and old, is less frequently the victim of appendicitis than the male, this slight immunity being accounted for by the comparatively smaller size of the organ with its increased vascularity (an anastomotic branch being given off from the region of the right ovary). In early life the mucous membrane of the appendix possesses wonderful power of absorption, and this in itself may become an active predisposing cause. Exposure is a possible element in the causation of the disease. Micro-organisms are now looked upon as being active exciting agents, and the bacillus coli communis is the germ most frequently found—Hodenpyl notes its presence in 34 out of 35 cases, Hawkins in 57 out of 61. They may act independently, but their invasion is usually secondary to some existing condition. Traumatism as a cause of appendicitis may be direct, but the author feels positive that in such cases the appendix is already in a receptive state, so that the injury is really only a minor factor. Foreign bodies and concretions, when they exist, doubtless play an important rôle. The author reports a case in which by digital manipulation he expressed a hardened fecal mass from an appendix into the intestine.

Chorea.—During a clinical demonstration of some cases, F. G. Penrose⁷ referred to the relation between this disease and rheumatism. He is of opinion that chorea is very largely a symptom of rheumatism, and that it may be taken to be as much a manifestation of the rheumatic condition as pain in the joints, nodules, or erythematous eruptions. Still we get a good many cases of chorea in which there is no other evidence of rheumatism, in which there is no evidence of heart disease, nor any evidence of family history of the disease. The disease is very apt to recur, and these choreic children are frequently brought back to us, a large proportion of them on account of having developed rheumatism. It is not wonderful that we do not always get a history of rheumatism when

we consider how slight some of the manifestations of rheumatism in children are.

Croup, the Symptoms or Phenomena formerly known as.—Langford Symes" says that we should be far better off without the term, as there is no such disease. The following group of symptoms seems to be embraced by the term:

1. *Laryngeal stridor.* A dry, croupy, tracheal wheeze, which merely indicates difficulty of breathing from some impediment or narrowing, preventing the air passing freely. The lungs are clear; the throat is clear to view, or perhaps slightly reddened, not swollen.
2. *Cough with a barking, "croupy" sound.* the fit consisting of inspiratory dyspnea with a couple of croupy barks following.
3. *Night attacks.* Worse at night. Child starts up in terror, gasping, wheezing, crouping, and barking; hardly any air entering, and in peril of choking. Apparently due to spasms.
4. *Great restlessness* and tossing about, also from impediment to respiration. This is a grave sign, and, in fatal cases where the child does choke, most agonizing to witness. It is also the first sign by which to estimate improvement.
5. *Recession of the chest.* These are all merely manifestations of some underlying actual disease. These are mainly three—diphtheria, laryngitis, and laryngismus. The characteristics of croup due to *diphtheria* are usually the following: *A gradual onset*, the croup being preceded by fever, disease commencing quietly and growing steadily worse. *The cervical glands* may be enlarged, hard, and painful. There is an *enlarged area of cardiac dulness*. The disease may be traced to *vegetable decomposition*, foul drains, sewers, or manure heaps. *Albumin* in the urine. Possible discovery of *membrane* in the pharynx, with bacteriological confirmation. Protracted illness and slow recovery indicate diphtheria; communication to or from others can only be diphtherial. There is sometimes a *septicemic rash* in diphtheria on the chest and abdomen, and the *knee jerks* are occasionally absent. In *laryngitis* of the acute form the distinguishing features are: hoarseness of voice, a hissing sound to the respiration, no enlarged glands, more rapid onset, no albuminuria, no special night attacks. It chiefly follows colds and chills, or succeeds to measles or whooping cough. It is wise to suspect diphtheria in every case of croup. *Laryngitis stridulosa* most closely simulates diphtheria, but is distinguished from it by the following features: *A very sudden onset*, its *occurrence at night*, its *recurrence*, the fact that it may be a *family affection*, *quick recovery*, its occurrence in children with *enlarged tonsils* or *adenoids*, its occurrence between the ages of 3 and 15. *Vomiting often gives relief*. *Laryngismus* is a convulsive disorder of young infants, unattended by cough. It is a pure neurosis, occurring almost exclusively in rickety infants about 18 months old. It is a spasmodic affection of the larynx, causing sudden arrest of breathing for a few seconds in the position of expiration, followed by a "crowing" inspiration when the glottis opens and the air rushes

in with a stridor. This should not be included in croup. It is cured by fresh air at the seaside, cold salt douches, meat juice, and remedies which control the nervous instability of the underlying rickets or tuberculosis. No attempt at hot rooms or steam should be permitted. In *laryngitis* the points to be relieved are swelling of the mucous membrane and spasm. The first may be eased by a purgative dose of calomel, leeches to the throat, bleeding, ipecac, and especially antimony. In a doubtful case the author saw great benefit follow the exhibition of one forty-eighth of a grain of apomorphia with each dose of antimony. Spasm can be relieved by hot sponges, steam, and possibly phenacetin or antipyrin carefully given. In suspected cases of *diphtheria* (and there is always a suspicion), antitoxin should be given at the earliest sign of laryngeal mischief—2,000 units for a child 2 years old, or 1,500 every morning for four days. This is our sheet anchor. It has also allowed cases to tide over the crisis with intubation which formerly died. There still remain intubation and tracheotomy. The signs of approaching asphyxia are recession of the chest and restlessness, and these, to the author's mind, form the most correct indications for the further admission of air. These signs should be watched, for in fatal cases the recession increases, the head is thrown back to straighten out the trachea, the restlessness gradually gives place to unconsciousness, and the child dies asphyxiated in convulsions.

Cretin Successfully Treated with Thyroid Extract.—

H. Oliphant Nicholson¹ describes the case of a child of 2 years and 8 months, who when first seen by him had all the characteristic symptoms of a cretin. Thyroid treatment was instituted. Two and a half grains daily of the powder causing digestive disturbances, the dose was reduced to $1\frac{1}{4}$ grains and continued without bad effects for several weeks. Improvement began in the first week and advanced rapidly, until at the end of three months very few traces of cretinism remained and the child was able to walk about without assistance and was making use of the short words and gestures of early childhood. After four months the improvement seemed complete, the only point worthy of notice being that the lower limbs had not grown quite in proportion to the body. Unfortunately, the child contracted measles of a malignant type and died. The photographs of the child, taken before treatment and after four months of thyroid treatment, are wonderfully convincing. It is difficult to believe that the child is the same in both.

Dental Caries in Public School Children.—

Arthur De Voe⁹ calls attention to the prevalence of dental caries among school children, and thinks that it should receive the same attention as ring-worm or vermin-infested heads. The teacher should note the condition of the mouths of her pupils and check their promiscuous use of chewing-gum, well-chewed pencils, whistles, or mouth organs. Parents who have carefully nurtured

their children at home, caring for their habits and preserving them clean externally and internally, with spotless teeth, may well hesitate to hazard their admission into the company of externally washed and brushed but foul-mouthed children of the public schools. Carious teeth often generate offensive gases which load the atmosphere of the poorly ventilated school room with a brain- and nerve-depressing stench.

Heart Disease in Children. *Diagnosis.*—J. P. Crozer Griffith¹⁰ says that the principal diagnostic symptoms of congenital heart disease are cyanosis, clubbing of the fingers, thrill, characteristic murmurs, and the absence of any great enlargement of the heart. The cyanosis is more intense than in any other condition; the clubbing may also occur in chronic disease of the lungs, but combined with cyanosis is of great diagnostic importance. The thrill is intense, rough, and widely diffused, but it is not always present. The murmurs are loud, rough, and of great intensity. They are heard at the base, but it must be remembered that anemia may give basic murmurs. The fact that there is commonly no great enlargement of the heart in congenital heart disease is in striking contrast to the very great enlargement which is so commonly seen in cardiac affections developing after birth. The second point is, whether there is a post-natal heart disease. The symptoms in childhood are commonly insignificant or absent altogether, and the heart disease is usually discovered by accident. There may sometimes be shortness of breath. Edema is a suspicious symptom and begins in the feet and develops in the abdomen, but it may occur in post-scarlatinal nephritis, beginning in the feet instead of the face. There is the edema of the feet in marantic infants, and edema dependent on grave anemia. Ascites may be due to tubercular peritonitis. Faintness, precordial pain, palpitation, cough, and hemoptysis are uncommon. Anemia may be of importance. As to physical signs, murmurs are not of great value, since they may be caused by so many other conditions. The accentuation of the pulmonary second sound is physiological in childhood, so that it is not of value as a diagnostic sign. Hypertrophy and dilatation of the heart occur in the heart disease of childhood, but nephritis also causes enlargement of the left side. Asthma may cause the lung to overlie the heart and make its size appear less than it is, so that hypertrophy will be overlooked. In childhood the right side of the heart reaches somewhat further toward the right than it does in adult life, and the apex beat is quite common in the fourth interspace instead of the fifth.

Pathology —J. Dutton Steele,¹⁰ writing on the pathology of acquired heart disease in children, says it is a general law that the tissues respond more quickly and more readily to stimulation and grow more vigorously in early life than after puberty. A corollary to this is that the tissues of the child are more yielding and more likely to give way under a sudden distending force than the more closely knitted tissues

of older people. Hence it follows that when additional demands are made on the heart muscle of a child, hypertrophy will take place more rapidly than in adult life, and under similar conditions dilatation will also be more common. The general nutrition of the organism is apt to be much better in children, and the degenerative processes so common in middle life are practically absent in childhood. *Acute rheumatism* is more often followed by heart lesions in children than in adults, and is apt to be very virulent. Roger, Picot, and Claisses place it at from 75 to 78 per cent of all the cases. The report of the British Medical Association places it at 72 per cent. *Puerperal infection in the new-born*.—In diseases of the heart occurring in the first few days of life, the cause seems to lie in the great susceptibility of new-born children to pyogenic infection. In *Acute infectious diseases* myocarditis is of much greater importance than inflammation of the serous membranes of the heart. *Diphtheria* causes acute changes in the heart muscle; Hallwachs concludes that the symptoms of heart trouble after diphtheria always depend on anatomic changes in the heart muscle, due to infectious myocarditis resulting from the direct action of the diphtheria toxin. But the sudden stoppage of the heart in diphtheria, after convalescence is well established, is probably not due to the toxin, but to some other and unknown factor acting on the already weakened myocardium. This unknown agent is probably of nervous origin and is the same as that which causes other paralyses. Romberg has apparently settled the fact that the poison of *Scarlet fever* may cause disease of the heart. The myocardium is oftener and more severely affected than any other portion of the heart. As a result of scarlatinal nephritis, dilatation and hypertrophy of the heart are, according to Friedlander, never absent. *Measles* has little effect upon the heart. *Rachitis* may produce hypertrophy by a combination of malformation of the chest and changes arising in the lungs from interference with their action. Congenital lesions cause many remote effects in the heart. Conditions inducing hypertrophy are: valvular lesions, adherent pericardium, congenital narrowing of the aorta—left heart; congenital openings between the sides—right heart; rachitis—right heart; scarlatinal nephritis—left heart. Causes leading particularly to dilatation are: acute myocarditis, alone or in combination with pericarditis, chlorosis and other anemias, severe forms of pertussis. The causes of acute endocarditis, in the order of their frequency, are: infectious fevers, especially scarlet fever, diphtheria, and typhoid; septic and pyemic conditions, tuberculosis and pneumonia. Chronic endocarditis is usually the result of the acute form. Insufficiency of the mitral valve is by far the most common of all the chronic lesions in children. Aortic disease is very rare.

Prognosis.—Arthur V. Meigs¹⁰ has been impressed with the fact that when children suffer from disease of the heart the prognosis should generally be more hopeful than when

adults suffer from heart disease. This is partly because they are more elastic than adults, whose tissues are stiffer and may be said to be brittle, and chiefly, perhaps, because children who have not attained their full growth have the opportunity for repair during growth. Injury or any distortion of the heart that is caused by disease may be effaced as the organ increases in size, for the usual tendency of Nature is toward the production of an ordinary type. The gravest prognosis should usually be given in cases in which there is conclusive evidence of great enlargement of the heart. The author holds that hypertrophy of the heart is not a compensatory condition, and that hypertrophied hearts are always hearts with degenerated walls.

Pathology of Congenital Heart Disease.—Alfred Hand¹⁰ says that no classification of these conditions is satisfactory, but the one based on etiology will perhaps serve, the anomalies being due to: (1) faults of development; (2) fetal endocarditis; (3) a combination of both, either one preceding the other and predisposing to it. As to the faults of development, we have: (1) those occurring early, from the fourth to the sixth week, showing a heart with two or three cavities, with a single or imperfectly divided arterial trunk; (2) anomalies arising between the sixth and twelfth weeks, with imperfect auricular or ventricular septa, imperfect or misplaced vessels; (3) defects occurring after the twelfth week, resulting in anomalies of the valves, persistence of fetal opening, etc. Fetal endocarditis may occur as the result of some infectious process in the mother, or without the mother being affected. The right heart is more frequently the seat of inflammation than the left.

Valvular Heart Disease in Children.—Frederick A. Packard,¹⁰ discussing the symptomatology of this affection, says that there is none, and that by careful physical examination alone can we be certain or even reasonably safe in presuming that there is absence of heart lesion. Out of 56 cases whose histories the author examined, 29 had had shortness of breath, 10 palpitation, 9 edema of the legs, 7 precordial pain, 6 epistaxis, 5 had complained of headache, a like number had been anemic, 4 had complained of abdominal pain, 4 had some cyanosis, and 4 had had blood-spitting. Only 3 had mentioned the presence of cough on lying down, or of vertigo, while other symptoms mentioned in only one or two cases were anorexia, persistent cough, night cough, fainting spells, weak spells, listlessness, edema of the face, gastro-intestinal disturbance, loss of flesh, vomiting, cold hands and feet, and pain between the shoulders. While there is no symptomatology proper of heart disease, the existence of any abnormality makes careful examination as to the functional activity and physical condition of the heart imperative.

Fracture of the Femur in Children.—Henry F. Wharton¹¹ writes that the treatment of fracture of the femur in children and infants presents some difficulties which are not encountered in adults; yet the deformity is usually less marked than in

adults, and if present is more easily corrected. In the young the line of fracture is usually more or less transverse, and marked obliquity is the exception. This is accounted for by the fact that the fracture is the result of direct violence, and not due, as in adults, to indirect force, such as falls upon the feet. Fractures in this class of patients are also often incomplete, certain fibres of the bone giving way while others are only bent; and there is also in many cases a more or less incomplete rupture of the periosteum, which tends to prevent marked displacement of the fragments. The author has been impressed with the liability of children suffering from rickets to fracture of the femur. The results of treatment of these fractures are usually satisfactory. The shortening is usually slight, not more than one-quarter to three-quarters of an inch. In a few instances, especially in fractures involving the lower third of the femur, the injured limb, examined a few months after the injury, is found to be slightly longer than the sound one. This is accounted for by increased growth of the injured bone, due to irritation of the lower epiphysis from the traumatism.

Fatal Disease of Infancy, A, with Symmetrical Changes in the Region of the Yellow Spot.—William Hirsch' describes an affection of this kind, otherwise known as "amaurotic family idiocy" (Sachs) or "infantile cerebral degeneration" (Kingdon and Russell). The parents of these children were strong and healthy and gave no history of syphilis or tuberculosis. With a few exceptions they were Eastern Jews. Several children of each mother were affected. In some cases there are healthy children between the affected ones; in others all the children in the family are affected in the same way. The children are born apparently in good health and develop normally up to the third or fifth month. Between the third and eighth months the muscles begin to become flabby and weak, and the child is no longer able to sit up or hold up its head. The reflexes remain normal as a rule. In some cases the muscles become rigid and contracted; mental development is arrested; the children become dull and apathetic; the eyesight gradually diminishes to complete blindness. In most cases there is a marked hyperacuity, and some children are hypersensitive to touch. The most characteristic symptom is the peculiar changes on the retina. When the peculiar ophthalmological picture has developed, we find in the region of the yellow spot a whitish opacity, the centre of which shows a cherry-red spot. The discs appear at first normal, but undergo atrophy later on. From findings at the autopsies it was concluded that the disease was confined to the cells of the cortex of the brain and consisted of an arrested development of this organ, though some observers believed the process a degenerative one. Investigations carried on since the above conclusions tend to prove that the morbid changes are not confined to the cortex of the brain, and that an equal affection of all the nerve cells of the entire nervous system takes place,

the main features of which are a condition of chromatolysis and other degenerative changes of the protoplasm, combined with considerable swelling of the cell body and displacement of the nucleus toward the periphery of the cell. As to the nature of the affection, the only theory which corresponds in every respect to the clinical and anatomical aspect of these cases is one which assumes a toxic condition. As to the origin of the poison we are in doubt, but the author suggests that the mother's milk is at fault and advises that the child be taken from its mother's breast as soon as a diagnosis has been made.

Infantile Amaurotic Family Idiocy.—J. Herbert Claiborne²¹ reports a case. From his study of the subject he feels warranted in drawing the following conclusions: Under the terms amaurotic family idiocy have been grouped a number of cases with distinctive features. The children are born apparently healthy and remain so for several months; at the end of that time the parents notice sluggishness or somnolence; the child is unable to hold itself erect in the mother's lap, and frequently shows purposeless, irregular movements of head, body, and limbs. There is found at the macula of each eye a picture which strongly resembles that seen in embolism of the central retinal artery. Around the central point is a more or less oval grayish area, whose edges are not definitely lined, in the centre of which the macula appears as a cherry-red spot in blondes and a dark reddish-brown spot in brunettes. The termination is invariably death, which usually takes place before the end of the second year. At the autopsy the brain presents macroscopically the appearances that are found in arrest of development. Microscopic examination of the cortex shows that the greatest changes occur in the pyramidal cells. Changes are also found in the retina and spinal cord. It seems reasonable to regard the changes in the nervous system as the result of arrest of development. The etiology of the disease has not yet been established. The author queries whether the symptoms exhibited by these cases constitute a definite entity or whether they are merely symptoms of a disease which has not yet been recognized.

Influenza in Children.—Herman B. Sheffield²² discriminates influenza from similar acute affections by the following symptoms: 1. The invariable presence of influenza bacilli of Pfeiffer in the expectoration. 2. The simultaneous development of respiratory, digestive, and at times nervous phenomena. 3. Early and pronounced prostration, incommensurate with the severity and duration of the attack. There is one drug which, in the author's experience, acts almost as a specific in influenza; this is sodium benzoate. When called upon to treat a case of grippe of moderate severity, he orders:

R Sodium benzoate,
 Salol.
 Acetanilid..... āā 1½ grain.
 Caffeine..... ½ grain.

M. Make one powder.

He gives one powder every three hours to a child 6 years old, or, if the pain is severe and the child is kept awake, he adds one-twelfth of a grain of codeine sulphate to each powder. Where children refuse to take powders he gives the following mixture, adding codeine if necessary:

R Sodii benzoat.,	
Antipyrin...	āā 3 ss.
Liquor. ammon. anisat.,	
Syr. scillæ comp.....	āā 3 ii.
Syr. althææ.....	fl. 1 ss.
Aquæ anisi.....	q. s. ad fl. 3 ii.

M. One drachm every three hours to a child 6 years old.

The author also directs the inhalation of compound tincture of benzoin. Where digestive disturbances predominate he combines calomel and ingluvin in small doses. Nervous phenomena, such as extreme irritability and convulsions, usually yield promptly to the administration of sodium bromide and chloral, but under the sodium-benzoate treatment few cases need nerve sedatives. The characteristic prostrations are remedied by small doses of strychnine sulphate and the divers ammonia preparations.

Intubation of the Larynx.—Charles J. Whalen,¹⁴ in the course of an article upon this subject, calls attention to a method of extubation discovered in Paris which requires the use of no instruments. The nurse takes the child on her knee; the operator faces the child, and, with the left hand over the vertex, places the right thumb on the trachea, grasping the neck with the fingers. He then simultaneously compresses the trachea backward and upward, and jerks the child's head downward into the nurse's lap, and in the majority of cases the tube drops out without further trouble. The method is unscientific, dangerous, and uncalled for, and should only be resorted to in an emergency.

Nephritis in Childhood, especially that occurring in the Course of Malaria.—Dr. Moncorvo¹⁶ calls attention to the fact that the inflammatory process in the kidneys is very often a secondary infection occurring in the course of a general infectious disease, or is due to the toxins elaborated by the micro-organisms producing the general infection. The author cites a number of cases in which acute nephritis was coincident with or followed upon malarial poisoning. In some of the cases the diagnosis of malaria was confirmed by examination of the blood. He believes that these cases often escape notice on account of their usual benignity. As regards its clinical character, this nephritis does not markedly differ from that accompanying other infectious diseases. It is, however, of a shorter duration, and nearly always terminates favorably. The edema also, contrary to what is usually observed elsewhere, sometimes involves nearly the whole body. The secretion of urine is more than usually diminished, reaching occasionally to the point of uremia, which does not often last more than twenty-four hours. Albuminuria is almost constant; in

certain cases, however, it disappears for short intervals. The proportion of albumin varies greatly, according to the case and time of examination, but the amount is not always in proportion to the intensity and duration of the nephritis. Hyaline casts, with or without a covering of epithelial cells, are constant.

Ophthalmia Neonatorum.—J. A. Day¹⁷ writes, in the course of some remarks on this subject, that in all cases where there is evidence of recent gonorrheal infection or severe leucorrhea in the mother, irrigation is demanded and should be strictly enforced. This greatly lessens the risk of the eyes becoming infected during the passage through the vaginal canal, and obviates to some extent the possibility of the virus being introduced by the examiner's fingers. Free irrigation for several days prior to, and occasionally during, delivery, with corrosive sublimate 1:5000, or carbolic or creolin 2 to 5 per cent, will in most cases suffice to eliminate the possibility of infection of the conjunctiva. Care must be taken not to use very strong solutions during labor, as the severest possible inflammation of the eyes, producing total blindness, has resulted from the injection of a strong sublimate solution into the vagina at this time.

Optic Neuritis in Children.—Several cases seen by Leslie Buchanan¹⁸ in the course of private work, showing no evidence of bad health, suffered from atrophy of the optic nerves, while others with but slight signs of disease had moderately acute optic neuritis. It was soon noticed, however, that almost all such cases showed more or less marked enlargement of the cervical glands. In children optic neuritis is not at all common; but it may follow several conditions without being observed, such as exanthemata, acute rheumatism, etc. Probably the disease, however, in which the change is most frequently looked for and found is meningitis of tubercular origin. Enlargement of the cervical glands is not always due to tubercular origin, but it has been estimated that 80 per cent of all cases due to naso-pharyngeal mischief are, or are likely to become, tubercular. Putting these two facts together, the writer has come to the conclusion that it is reasonable to assume that in many of the cases under consideration the cause of the neuritis has been, or is, meningitis, tubercular in origin and mild in type.

REFERENCES.

- ¹ Arch. Ped., June. ² Columbus Med. Jour., July. ³ Jour. of Nervous and Mental Disease, July, 1898. ⁴ Bull. gén. de Thérapeutique, June 15.
- ⁵ Giornale internazionale della Sci. med., June 30. ⁶ Med. News, June 16.
- ⁷ Clinical Jour., Jan. 24. ⁸ Dublin Jour. Med. Sci., July. ⁹ Ped., May 1.
- ¹⁰ Jour. Am. Med. Assoc., June 23. ¹¹ Ther. Gaz., May 15. ¹² Ped., July 1.
- ¹³ N. Y. Med. Jour., June 30. ¹⁴ Jour. Am. Med. Assoc., June 2. ¹⁵ Virginia Med. Semi-Monthly, June 8. ¹⁶ Ped., Apr. 15. ¹⁷ Gaillard's Med. Jour., May.
- ¹⁸ Edin. Med. Jour., May. ¹⁹ Jour. of Nervous and Mental Dis., May, 1899. ²⁰ Lancet, May 26. ²¹ Bost. Med. and Surg. Jour., June 14.

THE AMERICAN JOURNAL OF OBSTETRICS

AND

DISEASES OF WOMEN AND CHILDREN.

VOL. XLII.

OCTOBER, 1900.

No. 4.

ORIGINAL COMMUNICATIONS.

THE PREVENTION AND TREATMENT OF POSTPARTUM HEMORRHAGE.¹

BY

JOHN W. BYERS, M.A., M.D., M.A.O. (Hon. Causa),

Professor of Midwifery, Queen's College, Belfast; Examiner in Obstetric Medicine in the
Royal University of Ireland; Vice-President of the Obstetrical Society of London;

Physician for Diseases of Women to the Royal Victoria Hospital, Belfast,

and Consulting Physician to the Belfast Hospital for Sick Children;

President of the North of Ireland Branch of the British

Medical Association, Belfast, Ireland.

POSTPARTUM hemorrhage may be defined as hemorrhage occurring after the birth of the child and either before, but usually after, the delivery of the placenta. If it occurs within a period of twenty-four hours it is said to be primary, but, for purposes of discussion, we may say clinically that postpartum hemorrhage occurs soon after delivery, or, if later, before the usual period that the medical attendant leaves his patient, believing her to be safe.

AMOUNT OF BLOOD LOST.—It has been stated that, as a result of careful estimates made in lying-in hospitals, the

¹ Introduction to a discussion in the Section of Obstetrics and Gynecology, British Medical Association, Inswich, August 3, 1900.

average amount of blood lost in childbirth is one pound; but, while this may be accurate scientifically, yet for practical purposes it would convey little information to tell a doctor engaged in private practice that when the blood lost at her confinement by one of his patients exceeded sixteen ounces he was to regard it as a case of postpartum hemorrhage. In practice we soon come to know that every patient is a rule to herself as to the amount of blood she loses during the birth of her child. Some lose more, others less, and it is probable that, as Dr. Giles has pointed out, there is a "physical temperament," characterized by copious pigmentation and the brunette complexion, in which the tendency to hemorrhage is greater. and among such the normal amount of loss at the time of labor would be above the average. A woman may be said to suffer from postpartum hemorrhage when she has a sudden excessive loss of blood after childbirth or when a slighter amount continues to flow, and when at the same time there are either uterine inertia or traumatic lacerations of the parturient canal, the effect of the hemorrhage being shown by her constitutional condition, as evidenced by her appearance (variations in pallor) and by her pulse (rapid, low tension, and the intervals between the beats not well marked).

PATHOLOGY.—In order that we may treat postpartum hemorrhage, it is necessary to know what are the usual pathological conditions present in cases of bleeding setting in immediately after delivery, and the causes may be grouped under two heads:

(A) Hemorrhage due to uterine atony, the bleeding in these cases arising from the uncompressed vessels in the placental area.

(B) Wounds of any part of the parturient canal, without any necessary uterine inertia.

By far the most numerous cases fall into Group A; indeed, some would restrict the term postpartum hemorrhage to cases of atony of the uterus, but, for purposes of diagnosis and treatment, I shall also have to speak of cases arising from traumatic lacerations. However, I ask your attention mainly to the first division (A), or cases of hemorrhage after delivery with a relaxed uncontracted uterus.

In the majority of labors postpartum hemorrhage sets in without our having had any warning to put us on our guard against its occurrence, but in some cases our suspicions as to the possibility of our having to deal with such a serious

complication may have been aroused beforehand. The following are the conditions which may lead the accoucheur to suspect the onset of postpartum hemorrhage:

I. *History*.—1. Hemorrhage at a previous confinement.

2. Rapidly succeeding pregnancies, especially met with among the poor, time not being given for the uterine muscle to assume its normal condition.

3. A combination of want of exercise and the taking of too much food and stimulants, as seen among the better classes.

4. Elderly primiparæ.

5. Patients with pre-existing metritis.

II. *During Pregnancy*.—1. Over-distension of the uterus (twins, hydramnios, etc.).

2. Presence of a tumor in the uterus (myoma), preventing uterine contraction.

3. Albuminuria.

4. Extreme mental depression, seen often in cases following the death of the husband.

5. Excited vascular system, especially toward the end of pregnancy.

III. *During Delivery*.—1. The character of the pains in the second stage of labor. “The pains are of this kind: they are strong and quick; they do not gradually culminate in a strong pain and subside again, but they are sharp, quick, and cease almost suddenly; and the intervals between the pains are long in proportion to the length of the pains.”¹

2. A pulse keeping rapid toward the end of delivery, with low tension and of a jerking nature. This state of pulse is quite different from that met with in nervous women at confinement or in those who have taken chloroform; in both of these conditions the pulse may also be quick, but there is a distinct interval between the beats and there is evident vascular tension.

By some it is thought the administration of chloroform during a confinement predisposes to the occurrence of postpartum hemorrhage. At the Nottingham meeting of the British Medical Association, July, 1892, I read a paper, “Does Chloroform Promote Postpartum Hemorrhage?” in which I endeavored to show that this anesthetic has no effect in causing postpartum hemorrhage, provided that in all cases care is taken not to effect delivery too rapidly and also to manage the third stage of labor according to modern teaching. Subsequent

¹ Whittle: British Medical Journal, September 27, 1873.

experience has confirmed me in the view I have stated, but I need hardly say, in all cases in which in obstetric practice chloroform is given to the surgical degree, a competent person should be asked to administer the anesthetic.

PROPHYLAXIS OF POSTPARTUM HEMORRHAGE.—There is no complication met with in obstetric practice of which it can be more truly said that its treatment is its prevention, and the best proof of this aphorism can be found in the circumstance that while students and medical men in the early years of practice dread the condition, as they get more experience they become less fearful of it and really meet it less frequently. I propose to speak first of the prophylactic measures to be used to prevent its occurrence in every case, and subsequently to say something as to the measures to be adopted under those special conditions which I have mentioned as leading us to suspect its onset.

Prophylaxis to be Adopted in all Cases.—The two measures which should be adopted in every case to prevent postpartum hemorrhage are: (I.) the proper management of the third stage of labor, and (II.) the important principle never to deliver in the absence of pains.

I. The management of the third stage of labor. Of no condition in obstetric practice may it be said with greater truthfulness that "meddlesome midwifery is bad" than of the management of the third stage of labor. This is due partly to the teaching of Credé, but still more to inaccurate knowledge as to what occurs in the uterus after the birth of the child. There are two factors in the third stage of labor, (a) the separation and (b) the expulsion of the placenta with the membranes. Nature should be allowed to separate the placenta, and then, if she is not equal to the second task, the accoucheur can assist in helping her to expel the already separated placenta. The great mistake is an attempt made at once by the obstetrician to express the placenta from the upper or contractile part of the uterus (a line of practice liable to be followed by retention of membranes, postpartum hemorrhage, and even septic poisoning), instead of waiting until certain signs indicate that Nature has herself done this. For the sake of clearness, and because of its enormous importance as a preventive of hemorrhage after delivery, let me point out the best method of managing the third stage of labor.

Management of the Third Stage of Labor.—As soon as the head of the child is born the left hand of the accoucheur is

placed on the woman's abdomen, over the fundus of the uterus, the ulnar edge of the hand looking toward the vertebral column. The child's eyes are wiped, and a finger ascertains if the cord is round its neck. During the subsequent birth of the child the left hand of the accoucheur follows down the fundus. Immediately after the child is born the woman is turned on her back, the advantage of this most important step being twofold, as it enables the uterus to be easier and better controlled by the accoucheur's hand, while it prevents (especially in multiparæ) the entrance of germ-laden air through the relaxed vulva. As soon as pulsation has ceased the nurse ties the cord, one ligature being placed in the usual way near to the child's abdomen, the other close to the vulva of the mother (care being taken to gently draw down the cord so as to leave no loop in her vagina). The hand of the accoucheur never leaves the fundus (except in the case of a child born in white asphyxia, when the doctor must look after it and the nurse takes his place in controlling the fundus). No attempt should be made to massage or stimulate the uterus; all that is required is simply to control the uterus with the hand and to ascertain when the placenta has separated. This can easily be diagnosed by the following signs:

1. A sudden rising up of the uterus, which may have previously been largely in the pelvis.

2. A swelling detected above the pubes, due to a bulging forward of the lower uterine segment. It is very much in the position of a distended bladder, and is sometimes mistaken for it.

3. Greater mobility of the uterus.

4. Expulsion of a few more inches of the cord, as shown by the fact that the ligature placed at first close to the patient's vulva has now advanced from that position a few inches.

The separation of the placenta, as indicated by these signs, takes place in about twenty to thirty minutes. When once the placenta has separated and has left the upper active and contractile portion of the uterus, then firm pressure is made by the hand of the accoucheur over the fundus during the height of a pain, and the placenta is expelled out of the lower uterine segment and vagina; the nurse then takes charge of the afterbirth, gradually turning it round and round to get the membranes thoroughly away. The hand of the accoucheur still controls the uterus, and while he is doing this the nurse floats the placenta and membranes in a basin of water,

so that he can see if there is any lobule of placenta left behind, or if there is a piece of chorion wanting, indicating the presence of a placenta succenturiata. Supposing the examination of the placenta and membranes shows there is nothing left behind, the nurse bathes the patient's vulva with a mercurial lotion (all blood, etc., being removed), applies a pad wrung out of corrosive, and the binder is put on, but the accoucheur never lets go control of the uterus until this is completed. In this way the uterus is left in a state of permanent retraction.

II. The other important measure as a prevention of post-partum hemorrhage is not to deliver in the absence of pains. As examples of the abuse of this principle I may cite such a condition as "secondary uterine inertia," where a labor comes to a standstill. The pains cease; the woman and her friends (Smellie's "gossips") urge the doctor to deliver her. It may be she is well on in the second stage, but her pulse is quiet, and her uterus on abdominal examination is relaxed, and there is no rise of temperature. The doctor yields, tired, it may be, after sitting up all night and anxious to visit other patients; he easily slips on the forceps and delivers, but later on severe hemorrhage sets in, the uterus not having contracted, and the woman is in imminent peril. Here the proper line of action should be to give a dose of opium; the woman will then fall asleep, and after a time pains will come on again and she will probably deliver herself without any assistance.

Another example of the terrible mistake of delivering in the absence of pains is afforded by the way cases of placenta previa are sometimes managed. It is well known that one of the best methods of treating placenta previa is by bimanual version, a foot being brought down so as to dilate and plug the lower part of the uterus with the child's leg and thigh. Too often it is forgotten that time must be allowed for uterine pains to come on and deliver the child after it has been turned; the delivery is hurried after the child has been turned, and, as a result, hemorrhage occurs from an atonic uterus, while the forced delivery, by tearing the tissues of the lower part of the uterus (which, owing to the implantation of the vascular placenta, are as soft as blotting-paper), causes also a bleeding due to traumatic laceration of the parts.

Prophylaxis to be Adopted in Suspected Cases of Post-partum Hemorrhage.—When, from the symptoms I have mentioned, we suspect the occurrence of hemorrhage after delivery, the following precautionary measures should be adopted:

1. During pregnancy the patient should be advised to take exercise and to keep her skin (baths) and bowels (purgatives) acting. She should avoid all stimulants of any kind, and if there is albuminuria a milk diet should be enforced. 2. During confinement the fetus should be delivered slowly, its birth being followed down by the hand on the fundus, and it is good practice (provided the head or breech presents) to puncture the membranes when the os is nearly fully dilated. By this measure the pains are increased in energy, and it also favors tonic contraction of the uterus after expulsion of its contents. Further, from the very onset of labor the patient should be kept lying, and as soon as the os is fully dilated I have found the practice recommended by the late Dr. McClintock, of giving two teaspoonfuls of liquid extract of ergot, most useful.

In cases where I suspected the occurrence of postpartum hemorrhage I have prescribed, for a couple of weeks before delivery, ten grains of chloride of calcium thrice daily. This practice gave good results, but whether the medicine or the careful management of the third stage of labor deserves the credit it is, of course, difficult to say. Dr. Atthill, of Dublin, in cases where from the experience of previous labors he anticipated postpartum hemorrhage, or where in the progress of tedious labors the uterus became exhausted, so that he suspected hemorrhage after delivery, gave in the former case, for three weeks before the expected labor, a mixture of liquor strychniæ with infusion of ergot, adding iron if the patient was anemic, hydrochloric acid if she was plethoric. He gave this mixture for seven to ten days, then, after ceasing its administration for forty-eight hours, he let the patient continue to take it.

The mixture is as follows:

R. Extracti ergotæ.....	fl. ʒ iii.
Liquoris strychniæ ¹	ʒ i.
Acidi hydrochlor. dil.	ʒ ii.
Infusi ergotæ.....	ad ʒ vi.

M. Signa: A measured teaspoonful thrice daily.

In anemic women the hydrochloric acid was replaced by one drachm of ferri et ammonii citras. In the latter case (exhausted uterus in a tedious labor) he recommends a dose of ergot with ten drops of liquor strychniæ in the first dose, and five drops in the next, if necessary.

¹ Liquor strychniæ, B. P., contains one per cent of the alkaloid.—Ed.

Endometritis in a married woman at the child-bearing age should be carefully treated.

TREATMENT OF POSTPARTUM HEMORRHAGE.—As there is hardly any complication met with in midwifery needing greater pluck and more resourceful and prompt action on the part of the attendant, it is good practice in all confinement cases to see, as the second stage of labor is advancing, that everything is conveniently ready, such as hot water, the douche with double-current intrauterine tube (Bozeman's or Budin's), etc. The accoucheur, fortified in this way, acts with much greater self-reliance should hemorrhage suddenly set in. Supposing the placenta has all come away and that then suddenly bleeding sets in with a relaxed, inert uterus, what should be our line of practice?

1. I think the first measure to be adopted is *external uterine massage*. By this means the uterus is stimulated to contraction, clots are expelled, and often this method is sufficient of itself to arrest the hemorrhage.

2. Should this plan fail, then I recommend the use of hot water. A double-current instrument (Budin's or Bozeman's) should be employed, and it is a great advantage at the same time to draw down the uterus by catching the anterior lip of the cervix with a volsella forceps. Certain precautions in the use of hot water are necessary: (1) *Temperature*: In maternities a bath thermometer is of use as indicating the proper temperature (118° F.) to be used; but in private practice the best rule is to use the water at that temperature which the hand immersed in it will bear. (2) *Amount*: The hot water should be used in large quantities. (3) The intrauterine tube should be passed up to the fundus, so that the whole inner surface of the cavity is bathed. (4) *Antiseptic*: Some use a little creolin in the hot water. I prefer salt, a teaspoonful to the pint. Never use any corrosive in the hot water, the objection to it being that, owing to the open state of the uterine vessels, absorption takes place rapidly, with the risk (I have seen its occurrence) of mercurialism. Cold water should not be employed; it is not sterile, and its low temperature has a prejudicial effect on the anemia, while the hot water is distinctly stimulating.

3. *The Introduction of the Hand into the Uterus*.—As there is no operation, I believe, so dangerous to a parturient woman as the introduction of the hand of her attendant (owing to the admitted difficulty of rendering it aseptic) into the ute-

rus, this practice should only be done when the indications are clear. If hemorrhage sets in before the placenta comes away, and if, owing to adhesions, external abdominal massage fails to expel it, then the hand must be introduced to separate and withdraw the placenta. Again, if a lobule of placenta or a piece of outlying afterbirth is retained (I have mentioned the signs indicating both of these conditions), the hand should be introduced to remove the retained parts, which prevent by their presence the uterus contracting on its open vessels. After the hand has been withdrawn the uterus should be carefully douched with a hot creolin lotion. In the absence of the clear indications I have mentioned, the use of the hand inside the uterus is, I believe, bad practice. No doubt it stimulates the uterus to contract, but hot water will do this equally well, and there is not the same risk of septic poisoning as when the hand is introduced.

4. Should the preceding measures have failed, then we may try *bimanual compression*, but my own experience of it is that it is very fatiguing to the accoucheur and trying to the patient, and I prefer

5. *Gauze Plugging of the Uterus*.—A word about its technique. You may, as the text books teach, need three lengths of four or five yards, each three to four inches broad; but I have been struck with the fact that, when the uterus is drawn down with the volsella, in many cases very much less of the gauze is needed. The plan I can recommend from personal experience is to carry in your obstetric bag one of Dührssen's sealed tins of sterilized iodoform gauze. This tin takes up little room, it can be opened quickly (as a tin of Brand's essence), and it contains sufficient gauze to plug the uterine cavity. I get it, through Fannin, the instrument-maker in Belfast, from Berlin. Great care should be taken to plug the uterus tightly up to the fundus. The hold given by the volsella forceps allows sufficient counter-pressure when you are packing the cavity of the uterus. The gauze acts by stimulating the uterine muscle to contract, but also by insinuating itself into the mouths of the bleeding vessels and so directly compressing them.

6. *Drawing Downward the Uterus*.—Should we meet a case where, notwithstanding the gauze packing, hemorrhage continues, I think we should first, on the assumption that our previous technique has been at fault, remove the gauze, wash out the uterine cavity with a creolin douche, and reapply,

packing very firmly, the gauze. If, notwithstanding, the hemorrhage again returns, I would strongly recommend the firm drawing down as far as possible of the uterus with tenaculum forceps passed through the lips of the cervix. This method acts, I think, by kinking and compressing the uterine arteries, as is seen often in the operation of vaginal hysterectomy. In such circumstances Schauta, of Vienna, thinks atheromatous vessels are present in the placental area. He advises laparotomy in hospital practice, or in private practice eversion of the uterus into the vagina by pressure on the fundus, so that the bleeding vessels may be caught; or an india-rubber ring, as recommended by Kocks, or a gauze bandage, may be fastened round the everted uterus so as to cut off the circulation. The compression should not be maintained for more than six hours, to avoid gangrene; and Schauta prefers that the vessels should be caught directly rather than that pressure should be applied to the whole uterus. When the bleeding is stopped the uterus is to be reinverted. I have no personal experience of this method; I simply mention it on the authority of the distinguished Viennese obstetrician.

7. *Injection of Iron.*—I have not used the injection of perchloride of iron solution for the past five years. It is a remedy not without danger; it causes a certain amount of superficial injury of the uterine wall, which forms a suitable nidus for the growth of germs, and if it fails plugging cannot be done owing to the effect the iron has on the tissues. I have been told that gauze plugging has replaced the use of iron in bad cases of postpartum hemorrhage in the Rotunda Maternity Hospital.

The treatment I have mentioned applies to cases of uterine inertia giving rise to hemorrhage after the delivery of the placenta. Should bleeding set in before the afterbirth is delivered, pressure should be at once used to bring it away, and if this fails the hand should be introduced to separate and withdraw the placenta. Should a portion of the placenta remain or a piece of membrane, or should there be the suspicion of a uterine tumor, the hand must also be introduced both for diagnosis and treatment. In all such cases the uterus should afterward be most carefully douched out with a hot creolin lotion.

B. POSTPARTUM HEMORRHAGE FROM WOUNDS OF ANY PART OF THE PARTURIENT CANAL.—This division includes the class of cases described by the older obstetricians as postpartum hemorrhage with a contracted uterus.

The wounds or lacerations may occur in the perineum, the crura of the clitoris, or the vessels of the bulb, the vagina (of greatest importance when the wounds are at the upper and posterior part, often involving the large vessels of the cervix), the cervix, or the uterus itself.

A word or two about the diagnosis of the source of the bleeding in these cases.

I. The History.—It is after forceps or unaided labors that vulvar or vaginal wounds are most apt to occur, while lacerations of the cervix are more usually met with in breech and turning cases.

II. Examination.—The best time to distinguish between atony of the uterus and a wound of the parturient canal as a source of bleeding is when, by massage, you have made the uterus to contract. If the hemorrhage is from uterine inertia the blood is suddenly driven out of the uterus, but in lacerations there is a continuous oozing, the uterus remaining contracted. If the uterus is washed out by means of a double-channelled tube, the return fluid is clear if there is no uterine inertia, while if there are lacerations blood is still seen to flow at the sides of the tube from vagina or vulva. If blood comes from a wound of the vulva, ocular inspection will demonstrate its source and its florid color; if, with a contracted uterus, there is no wound of the external parts, then a careful examination of the vagina and cervix will show where the wound is, in cases of hemorrhage.

Treatment of Lacerations.—The perineum, if torn, should be stitched up. Hemorrhage from a wound of the vascular anterior part of the vulva (often produced by one of the blades of the forceps) may be stopped by a gauze pad and pressure, or a suture may be passed by a curved needle. Wounds of the vagina must be stitched, and if the cervix is lacerated it can be drawn down and sutured, or a gauze plug may be applied.

A very rare cause of postpartum hemorrhage is a wound of the uterus, or it may be due to a previously existing intra-uterine tumor which has been injured and torn during labor. Here diagnosis and treatment follow upon a careful digital exploration of the uterus. If possible the tumor should be removed and a gauze plug applied. In the rare cases of hemorrhage due to a tear of the uterus, gauze plugging should be used.

The After treatment of Postpartum Hemorrhage.—When the hemorrhage has ceased the subsequent anemia

demands most careful treatment. The patient should be kept quiet, her head low, the lower part of the bed being raised to facilitate the weak circulation. Subcutaneous injections of ether and strychnine are most useful, but our sheet anchor is saline transfusion, experiments having shown that in animals bled almost to death they will recover if a normal saline solution is introduced into the circulation. If the heart gets something to act on, it can be kept going until the natural vascular fluids have time to form again. The saline solution (one teaspoonful of salt in a pint of warm sterilized water) may be introduced direct into the veins; this is the best method, but it takes time and often cannot be done without skilled assistance. On the other hand, the solution may be given by enema, or, what is, I think, better, into the tissues by means of a large, hollow needle and funnel which are connected by tubing (the instrument-makers now provide the apparatus). Half a pint may be injected into the tissue under each breast. The amount of saline fluid to be used or re-used depends on the patient's condition—two, four, or six pints. It should be injected slowly at a temperature of 98°, and we should continue it until the pulse gets slower and increases in volume. In addition to these measures, in the treatment of the anemia the patient should be encouraged to take nourishment (such as concentrated meat juices, milk, etc.), which is quickly absorbed.

DREENAGH HOUSE, LOWER CRESCENT.

LITERATURE.

The various text books and works on Midwifery by Dakin, Herman, Spiegelberg, Barnes, Grandin and Jarman, Playfair, Jellett, Parvin, Donald, Jewett, Ahlfeld, Lusk, Norris, Fothergill, Dührssen, Tarnier, Schröder, Auvard, Veit, Leopold, B. C. Hirst, Olshausen, Pinard et H. Varnier, Winckel, Budin, Farabeuf.

BARBOUR: *The Anatomy of Labor*, second edition.

BARBOUR: *Atlas of Anatomy of Labor*, third edition.

BERRY HART: *Selected Papers in Gynecology and Obstetrics*.

SIMPSON, A. R.: *Contributions to Obstetrics and Gynecology*.

GILES: *On the Lochia*. *Obst. Trans.*, vol. xxxv., 1893.

SCHAUTA: *Postpartum Hemorrhage*. Vienna clinical lecture. Med. Press and Circular, May 8, 1895.

Smellie's *Midwifery*, edited by McClintock, vol. i.

PROBYN WILLIAMS and CUTLER: *Some Observations on the Temperature, Pulse, and Respiration during Labor and the Lying-in*. *Obst. Trans.*, vol. xxxvii., 1895.

BYERS, JOHN W.: *Does Chloroform Promote Postpartum Hemorrhage?*

Read at annual meeting of the Brit. Med. Association, Nottingham, July, 1892. Med. Press and Circular, July, 1892.

BYERS, JOHN W.: The Management of the Third Stage of Labor. Transactions of Ulster Medical Society, session 1897-98.

SMYLY, W. J.: The Prevention of Puerperal Fever. Med. Annual, 1895.

MACAN, A. V.: The Management of the Third Stage of Labor. Brit. Med. Jour., Aug. 10, 1887.

SMYLY, W. J.: The Management of the Third Stage of Labor. Brit. Med. Jour., 1885, vol. i.

JELLETT, HENRY: The Dublin Method of Effecting the Delivery of the Placenta. Dub. Jour. of Med. Sci., June, 1900.

MACAN, A. V.: Hemorrhage from Laceration of Upper Part of Vulva. Dub. Med. Jour., Nov., 1875.

BYERS, JOHN W.: The Prevention of Puerperal Fever in Private Practice. Brit. Med. Jour., Nov. 13, 1886.

BYERS, JOHN W.: A Plea for the Early Recognition and Treatment of Puerperal Fever. The Lancet, Aug. 26, 1896.

FEHLING (of Halle): Pathology and Treatment of Hemorrhage after Birth. Deutsche Med. Wochen., June 7, 1894.

ATTHILL: Administration of Ergot and Strychnine in Cases of Suspected Postpartum Hemorrhage. Brit. Med. Jour., Feb. 27, 1886.

Rotunda Reports by the various masters.

ARNDT: A New Method of Treating Atonic Uterine Hemorrhage by Repeated Drawing Downward of the Uterus. Munich Med. Woch., No. 43, 1898.

GLENN, J. H. R.: Treatment of Severe Hemorrhage by the Infusion of Normal Saline Solution. Trans. Obst. Sec., Roy. Irish Acad. of Med., 1895.

MACAN, A. V.: Collapse from Postpartum Hemorrhage treated successfully by Subcutaneous Injection of Ether. Dub. Jour., 1876.

VARNIER, HENRI: La Pratique des Accouchements. Obstétrique Journalière, Paris, 1900.

SPINA BIFIDA.

BY

W. REYNOLDS WILSON, M.D.,
Philadelphia.

(With two illustrations.)

THE condition of spina bifida is that in which separation of the spinal laminæ, due to faulty fusion of the blastoderm, permits of hernial protrusion of the elements of the cord and its membranes.

Chaussier, in the Paris Maternité, in 22,293 new-born infants found 132 instances of abnormal development, among which

were 22 spinæ bifidæ. This places spina bifida next in frequency to club-foot.

Pathogenesis.—At an early stage in embryonic life the primitive streak appears at a point just behind the centre of the embryonic area. The ectoderm thickens in front of the primitive streak, forming a fold which extends backward on either side. These lateral folds are called the medullary plates. The arching inward of these plates forms the medullary groove. The latter is converted into a tube by the union of the edges of the lateral folds, forming the medullary or neural canal—the protone of the cerebro-spinal system. The development of this canal progresses most actively at the cephalic extremity of the embryonic area; the posterior portion, the end of which appears to embrace the beginning, or anterior point of origin, of the primitive streak, remains open for some time, constituting the so-called sinus rhomboidalis.

Immediately beneath the developing neural canal a rod of concentrated entodermal cells enters into the formation of the notochord, which represents the primitive axial skeleton. The notochord becomes surrounded by the mesenchymal sheath—the structural differentiation of the mesoderm from which ultimately is developed the primitive vertebral column. The intermediate stage in the formation of the latter is represented by the protovertebræ—the mesodermal anlagen of the vertebræ.

This condensation of mesenchymal cells takes place in transverse segments and is limited laterally by the muscle-plates. The upward growth of the mesenchymal discs thus forms a succession of seriate bows or inverted arches which later become continuous through the fusion of the separate plates. The longitudinal furrow thus formed constitutes the embryonic vertebral column, which at this stage in development constitutes simply an integumentary enclosure of the medullary canal and notochord. In the second month of embryonic life this ring undergoes cartilaginous change, giving rise to the cartilaginous vertebral bodies. That portion which does not undergo such change constitutes the ligamenta intervertebralia, which up to this time serve as the dorsal covering of the medullary canal (the so-called membrana reuniens superior), the latter remaining uncovered by the cartilaginous arches until the fourth month.

Any lesion of the cord or its membranes may interfere with the closure of the vertebral arch while the latter still exists as a membranous structure. Equally, congenital neoplasms of

the spinal axis, as well as undue pressure of the cerebro-spinal fluid during the stage of development, will serve to arrest fusion. In other words, any condition giving rise to eccentric pressure in the spinal canal before union of the bony arches will promote diastasis with consequent hernia.

Amniotic adhesions have been cited as the cause of imperfect closure of the spinal canal, and it is quite possible that the membranous closure of the neural canal may be interfered with by the presence of such adhesions. It is more likely, however, that in certain cases the diastasis may be attributed to the pressure of accumulating cerebro-spinal fluid in accompanying hydrocephalus (*hydrops cerebro-spinalis*), the pressure being of such extent, in the presence of adhesions, as to favor a further arrest in development. On the other hand, we may note in this connection that the frequent association of hydrocephalus with spina bifida points to the likelihood of spina bifida being simply an additional expression of the inherent developmental defect in the central nervous system.

The presence of a tumor in the central canal of the cord may, owing to pressure, give rise to a separation of the developing laminae, thereby disassociating the elements of the cord and causing protrusion of the fibres thereof.

Intrauterine kyphosis, from exaggerated curvature of the spinal axis, has been considered as a possible cause of spina bifida.

Excluding tumors, hydrocephalus, cicatrices of the integumentary covering of the spinal canal, the pathological conditions are inexplicable except in the presence of that obscure factor, faulty development. In this connection exuberance in development, on one hand, is illustrated by the presence in the cavity of *spinæ bifidæ* of numerous fully developed nerve elements which are limited in their distribution to the sac wall; while, on the other hand, irregularity in function and continuity of these elements is shown by the fact that in radical cure the section of the strayed fibres seems not to induce phenomena of disturbed function.

This last point brings us to the view of Monod, who believes that in spina bifida we have to do with a hypertrophy of the spinal cord in which the hernial protrusion includes the hyperplastic elements, simulating a hernia of the cord proper: whereas the continuity of the medullary axis is preserved, at least from the physiological standpoint. The absence of

paralysis in some instances before operation, and especially after section of the protruding fibres, supports this view.

Description.—The tumor consists usually of a thin-walled sac with fluid contents. The normal closure of the spinal canal progresses caudad, so that the defect in closure is more apt to appear in the lumbo-sacral region, next in frequency in the cervical region, most rarely in the dorsal region. The size of the tumor is variable, and in certain instances (spina bifida occulta) the only evidence of its presence lies either in the presence of accompanying complications or in the abnormal condition of the skin at the seat of the lesion. The tumor is often sessile and attached by a large base slightly constricted by a narrow furrow. As the mass increases in volume this constricted appearance may be lost and the attachment become elongated into a pedicle which lengthens as the weight of the tumor increases. Small pedunculated tumors are rare.

Either the healthy skin is merged insensibly into the membranous covering of the sac at its periphery, or a distinct line of separation limits the tumor, as in exomphalos. The arborescent vascular zone (area medullo-vasculosa of Von Recklinghausen) sometimes observed at the edge of the membranous covering of the sac may give to the mass the appearance found in erectile tissue. Certain tumors present a thickened covering of skin, with the presence of subintegumentary fat. In such instances the cavity is encroached upon by the thickened wall. Frequently the attenuated covering of the sac is made up of the spinal membranes. In such cases, instead of the well-defined edge of skin at the periphery of the tumor, the integument may merge imperceptibly into the covering proper of the sac. The covering may be extremely thin, and in some instances may be perforated by a small opening which permits of gradual evacuation of the sac. A hyperplastic growth of hair may mark the covering, especially of the deeper-seated sacs with thickened walls.

Pathological Anatomy.—The effusion present in the spinal axis characteristic of spina bifida may give rise to two forms of cystic distension—hydrorrhachis interna and externa, according as to whether the effusion occurs in the membranes of the cord (hydrorrhachis externa) or in the central canal of the cord (hydrorrhachis interna). This distinction embraces the general anatomical division of such tumors as far as the relation of the spinal cord and its membranes to the cystic effusion. The presence of a defect in the vertebral arch admits of herniæ of such tumors, which may be classed as follows:

1. Spinal meningocele, in which there exists a simple hernia of the meninges.

2. Myelo-meningocele, in which the fibres of the cord are incorporated in the sac wall formed by the protruding membranes.

3. Syringo-myelocoele, or myelo-cystocoele, in which the central canal of the cord is dilated by the effusion, forming a cystic tumor surrounded by the disassociated fibres of the cord.

4. Spina bifida occulta, in which the distended sac is so limited by the soft tissues covering the vertebræ that the tumor presents the characteristics of a solid mass.

5. Anterior sacral spina bifida, in which the bodies of the sacral vertebræ are defective, permitting an anterior or intra-pelvic protrusion.

The deficiency in bony union varies in extent from a small opening confined to a single vertebral arch to a total absence of vertebral union involving the spines, laminae, and even the transverse processes. The separation (rhachischisis) may be confined to imperfect union in one or two vertebræ or may be coextensive with the vertebral column. In most instances the region of the tumor is marked by an alteration in the vertebral structure as a whole; the vertebral bodies are apt to be poorly developed and their individuality lost by reason of their structural coalescence. In such instances there is apt to be an alteration in the axis of the vertebral column, resulting in kyphosis.

The local separation giving rise to spina bifida usually affects one or two vertebræ, and when situated in the lumbar region commonly involves the upper portion of the sacrum. There may be extensive separation involving one or more arches, or the tumor may appear to spring from an extremely small opening.

As to the pathological condition of the cord, Rech has found that in myelo-meningocele the nerve elements are imperfectly developed, while in syringo-myelocoele (myelo-cystocoele of the Germans) the spinal cord is fully developed. From this it is possible to conclude that myelo-meningocele occurs at an earlier period of development than does syringo-myelocoele. In other words, the protrusion of the spinal elements occurring coincidentally with the distension and protrusion of the coverings of the cord takes place *pari passu* with the development of the spinal cord, whereas the distension of the central canal occurs only after the latter has been fully enclosed

by the completely developed cord. Therefore, in syringomyelocele the cavity of the tumor is lined with cylindrical epithelium. In such tumors the elements of the cord, more or less separated and compressed, are incorporated in the cyst wall. The cavity of the cyst, however, does not contain nerve fibres.

In myelo-meningocele the spinal elements are distributed to the sac wall in fasciculi which terminate in the limiting cover-

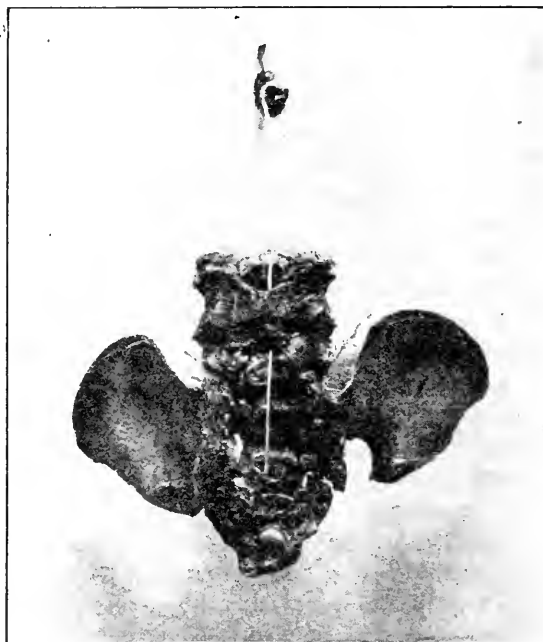


FIG. 1.—Crater-like opening involving sacrum and last lumbar vertebra.

ing of the cyst, the lower group of fibres commonly forming a strand which ends in a zone of granulation in the sac wall.

When the vertebral slit is small it is apt to be occluded by the emerging and recurring nerve fibres in the form of a loop which shuts off the communication between the cyst proper and the spinal canal.

The covering of the sac is made up of the spinal membranes, usually the pia and arachnoid, the dura extending outwardly only to the thickened base of the sac at the periphery of the tumor, or, more properly, where the sac emerges from the spinal canal. As one approaches from the neighboring in-

tegument the zone of differentiation between the skin proper and the covering of the sac, especially in sessile spinæ bifidæ, it is found that the area included between the skin and the lining membrane of the sac as it is deflected toward the orifice of communication with the spinal canal presents a collar of connective tissue—the so-called fibro-aponeurotic zone. In the midst of this tissue are found muscle fibres considerable enough always to permit of dissection. It is in such tissue that one may find the osseous tubercles that represent the extremities of the undeveloped laminæ. This tissue contains also dilated vessels and fibres derived from the spinal nervous plexus.

The cavity is lined usually, especially where the sac is thin-walled, by a delicate membrane, the nature of whose structure reveals itself rather by histological examination than by dissection, inasmuch as the inner layer of the spinal envelope is scarcely to be differentiated from the sac wall.

The cyst is commonly unilocular, but in irregularly disposed tumors there may exist accessory cavities communicating with the main cavity.

Spina bifida is usually associated with other malformations, such as congenital hydrocephalus, club-foot, harelip. Instances of cephalocele and anencephalus are frequently accompanied by spinal separation. Diastasis of the anterior embryonic folds (the somatopleure), as shown in omphalocele and extroversion of the bladder, may also complicate spina bifida.

Complications.—Functional disturbances may occur alike in lumbo-sacral and cervical spinæ bifidæ, resulting in paralysis of the extremities. In a similar respect disturbances of innervation are met with in the form of paralysis of the sphincters of the bladder and rectum. Trophic disturbance and abnormality of sensibility may be present. As to pathological changes in the condition of the genital apparatus and lower bowel, Rech cites a case reported by Qvisling in which a complete congenital uterine prolapse existed complicating lumbar spina bifida. On the eighth day following delivery the infant, during a severe convulsion accompanied by intense intra-abdominal pressure, developed prolapse of both vagina and rectum. A similar case is reported by Schaffer, in which hypertrophy of the cervix with incomplete prolapse of the uterus existed in combination with spina bifida lumbalis. Malformation of the heart and cystic degeneration of the kidneys have been observed among the rarer complications.

Certain complications exert an influence upon the develop-

ment of the tumor, as, for instance, hydrocephalus. Although hydrocephalus may exist as a congenital condition complicating spina bifida, its presence often appears first in neonatal life. Such condition is explained by the accumulation of cerebro-spinal fluid in the tumor, giving rise to intracranial pressure as the cystic distension of the sac reaches its limit.

Course.—1. As to the condition of the tumor, one or the other of the following conditions may obtain. First, the sac may undergo spontaneous closure, resulting in obliteration of the cyst. If this occur the sac wall may become less yielding, and, in thus offering greater resistance, may cause backward pressure of the transuded cerebro-spinal fluid with distension of the ventricles and widening of the cranial sutures. Second, ulceration of the sac may take place, resulting in rupture. Rupture due to pressure is more apt to occur in hydrorrhachis interna (myelo-meningocele), owing to the accumulation of the fluid in the central canal, than in hydrorrhachis externa, where the arachnoid space alone is the seat of effusion. Rupture may occur before birth, with leakage through the fistulous opening thus formed and collapse of the tumor. If rupture occur in extrauterine life the contents may either be evacuated suddenly or may drain away gradually, causing a threatening loss of cerebro spinal fluid. Where ulceration of the sac exists infection of the cyst may take place. In one such case reported by Holt, septic spinal meningitis extending ultimately to the brain followed the local infection.

2. As to the symptomatology, we may note, as complicating any one of the conditions described above, the possibility of hemorrhage into the sac either during birth or in the first few days of extrauterine life. If the child survive such accident, and if the sac does not rupture, the tumor may persist throughout infantile life without producing apparent effect upon the general health of the subject. More frequently the infant remains poorly nourished and becomes liable to the accidents dependent upon some one of the complications that may be present. If the tumor remain fluctuant it is apt to enlarge when the child cries, owing to the increased tension of the contained fluid. As an exception, however, we may note that in some instances the vertebral cleft becomes occluded by the nerve fasciculi, which, having emerged into the sac, re-enter the spinal canal in a recurrent direction, shutting off thereby communication between the canal and sac. In such instances the classical symptoms of pressure are absent.

Unfortunately ulceration followed by convulsions and death is the common termination in these cases. When the tumor persists, incontinence in urine and of feces, together with paraplegia, are common symptoms.

Diagnosis.—Lumbo-sacral spina bifida may simulate any of the following conditions:

(1) Teratoma of the sacro-coccygeal region; (2) post-rectal dermoid; (3) cystic hygroma; (4) lipoma; (5) sarcoma; (6) ischiatic hernia. Spina bifida anterior in the female may be confused with congenital tumors of the sexual organs.

Most of the conditions mentioned, however, may be excluded by a careful examination of the contour and consistence of the tumor, by the character of the percussion note, by the absence of fluctuation and translucency. The arborescent zone of vascularization often observed at the edge of the membranous covering in spina bifida may serve as a means of differentiation. The connection between the tumor and the spinal canal may be established by compression of the tumor. The effect of pressure on the tumor may be shown in coma and slowing of the pulse rate. Where hydrocephalus is present pressure on the tumor causes bulging of the anterior fontanelle. On the other hand, it is a matter of common observation to discover the presence of increased pressure in the sac from the effect of crying and straining.

The sac, however, does not always yield to the effect of internal pressure exerted by the cerebro-spinal fluid. For instance, in certain cases the tumor remains flaccid during the effort of crying, showing an absence of communication between the spinal canal and the cavity of the sac. Such condition is probably due, first, to the extremely small opening which sometimes exists; second, to the doubling of the fasciculi of the nerves as they re-enter the cleft, as described above.

The diagnosis in spina bifida occulta is difficult on account of the absence of the outward evidences of enlargement.

The presence of hypertrichosis in such cases may be a help in diagnosis. Disturbances of innervation (paralysis) may also be present. It is difficult to determine the extent of the osseous cleft by examination, inasmuch as the intervening tissue making up the sac wall is usually extensive; further than this, the cleft is sometimes insignificant, even in cases where the hernia appears to be extensive. The zone of thickened connective tissue surrounding the base of the tumor may

sometimes give the erroneous impression of an osseous border, the bony cleft in reality being comparatively small.

In a certain number of cases the diagnosis of spina bifida may depend upon the character—chemical and physical—of the fluid contents of the sac obtained by aspiration. The number of such cases may be relatively small and the practical result as to therapy may be insignificant. Nevertheless a



FIG. 2.—Spina bifida. Showing hypertrichosis of sac wall.

knowledge of the properties of cerebro-spinal fluid may be of great importance in establishing the diagnosis, even in the limited number of cases where an examination of the fluid may be of practical importance.

It will be important to note that the examination of transuded fluid—in contradistinction to fluid obtained by aspiration—may be excluded as a means of diagnosis, as the physi-

cal and chemical properties of cerebro-spinal fluid are altered by admixture with the products of inflammation, as, for instance, in septic involvement of the sac, and with blood and lymph.

In fact, the presence of hydrocephalus—a condition often complicating spina bifida—determines an accompanying inflammatory condition of the ventricle walls and of the pial meningeal sheath, the presence of which would alter the character of the cerebro-spinal fluid.

Leonard Hill has found, experimentally, that removal of the cerebro-spinal fluid produces a serous transudation. Foster also states that when the fluid is quickly formed its peculiarities disappear and it acquires the characters of an ordinary serous exudation.

St. Clair gives the following tests for cerebro spinal fluid:

1. The fluid is perfectly transparent, like water, and contains no sediment.

2. It is faintly alkaline in reaction, and either tasteless or slightly salt.

3. The specific gravity is between 1.005 and 1.010.

4. It is not viscous and gives no precipitate (mucin) on adding acetic acid.

5. On boiling there is not more than a trace of coagulum of serum globulin. Serum albumin is usually absent. for, after saturating with magnesium sulphate and filtering off the precipitated globulin, no proteid is found in the filtrate.

6. When boiled with Fehling's solution reduction takes place.

7. The reducing substance may be obtained by evaporating to dryness an alcoholic extract of the fluid. It is then found in the form of needle-like crystals (pyrocatechin).

8. The aqueous solution of this residue does not ferment with yeast.

These tests are quite sufficient to show that the reducing substance is not sugar.

The fluid is absolutely sterile.

In differentiating cerebro-spinal fluid from lymph it is essential to note that lymph is an exudation; it is like blood plasma in composition, only diluted so far as its proteid constituents are concerned. There is no doubt as to the presence of albumin in it; it coagulates spontaneously, and the specific gravity varies from 1.012 to 1.022. It always gives all the tests for

sugar; and in human lymph the total proteids amount to 13.66 per 1,000.

Treatment.—It is of great importance in treatment to observe such prophylactic measures as will properly protect the sac from rupture. In the event of a thin-walled cyst being subject to continued pressure during labor, the chances of rupture are imminent. In such cases great care must be used, after the birth of the child, in supporting the attenuated cyst wall. Dusting the tumor with an antiseptic powder and protecting it with a padding of absorbent cotton constitute safe prophylactic treatment.

It is essential alike in cases where a large, tensely distended sac exists, revealing a condition of excessive pressure exerted by cerebro-spinal fluid, and where communication between the sac and spinal canal persists, to avoid undue compression in dressing the surface of the tumor.

Unyielding dressings, therefore, such as adhesive plaster and collodion, are inadmissible.

Before discussing the surgical treatment of spina bifida, whether palliative, as, for instance, by the injection of irritating fluids or by ligature; or whether radical, as by excision of the sac, it is essential to differentiate the pathological conditions present as to five important particulars:

1. As to the extent of the sac.
2. As to the condition of the covering of the tumor.
3. As to the character of the sac contents—that is, whether there exists a simple distension of the spinal meninges, or whether the elements of the cord be incorporated in the sac wall.
4. As to the degree of osseous separation and as to the presence or absence of osseous tubercles surrounding the periphery of the bony opening.
5. As to the general condition of the infant—whether the lesion be complicated by debility, the presence of hydrocephalus, etc.

The general indications as to treatment may be stated concisely as follows: In cases where the tumor is not extensive and the covering not sufficiently attenuated to offer the possibility of accidental rupture with the consequent infection of the contents before operation, and where the edges of the bony opening cannot be detected as widely separated, excision of the sac with closure of the aponeurotic layers contiguous with

the edges of the bony cleft may be attempted, provided the general condition of the infant warrants such procedure.

Taking up *seriatim* the various methods of palliative treatment which have been recommended, we may mention:

First. *The Elastic Ligature*.—This is an unscientific form of treatment, inasmuch as the constant constriction is apt to compress the protruding fasciculi of the cord which may be present. At best the irritation thus produced cannot be expected to induce sufficient inflammatory reaction to cicatrize the aponeurotic opening, and without such an object in view constriction can have no *raison d'être*. Further than this, in the absence of bony structure, permitting an extensive vertebral diastasis, the constriction can have no permanent effect.

The danger of sloughing and local gangrene with infection of the sac are further contraindications to this form of treatment.

Second. *Acupuncture*.—Puncture of the sac with compression has been advised with the hope of causing gradual evacuation of the contents of the sac and ultimate cicatrization. Infection of the sac or uncontrollable transudation of cerebro-spinal fluid may result from puncture. The examination of the contents of the sac for diagnostic purposes, in order to point the way for radical treatment, ought to be the only indication for evacuation by aspiration.

Third. *Attempted Obliteration of the Sac by the Injection of Irritating Fluids*.—Brainard has recommended injection of a fluid composed as follows:

Iodine	1 part.
Iodide of potassium	2 parts.
Distilled water.....	50 "

This fluid is to be freshly prepared and injected into the sac without previous evacuation of the fluid contents thereof. In the majority of cases no result may be anticipated from this form of treatment other than possible infection.

Fourth. *Electrolysis*.—The effects of this form of treatment are the same as those following other palliative measures, as described above.

Palliative treatment may be successful. The possibility, however, of spontaneous obliteration in spinæ bifidæ, irrespective of attempted treatment, must be considered. Looking at the subject rationally and with a knowledge of the bony lesion present, our success in treatment cannot be looked for in any attempt to obliterate the bony opening by such means. The

mechanical conditions present—that is to say, the pressure of the cerebro-spinal fluid, on the one hand, transmitted to the yielding integumentary covering of the sac through the point of communication in the spinal axis, on the other—prohibit the possibility of diminishing the tumor by obliteration of the sac alone.

Removal of the Tumor by Primary Absection followed by Direct Closure of the Incision.—Before discussing this method of treatment, which we may characterize as the radical procedure, it would be well to mention the objects which are to be attained. In the first place, the direct apposition of the periosteal covering of the edges of the bony opening can scarcely be looked upon as a possibility of surgical treatment, on account of the wide separation in most cases of the osseous tubercles, which represent the islands of ossification of the primary vertebral laminae, and on account of the delicate technique necessary in such procedure.

Piéchaud asserts, as a primary condition in the radical operation, that the absection should be carried out as rapidly and simply as possible, avoiding the risk of infection and the introduction of air within the cerebro-spinal axis.

The object of the operation is, therefore, narrowed down to the simple sero-aponeurotic occlusion. The only occasion for prolonged and delicate dissection is to be found in the adhesion of the cord with the sac wall. Both the terminal and lateral adhesions should be dissected and the elements of the cord returned through the opening as completely as possible.

The nerves which traverse the sac, notwithstanding their volume, are limited in their distribution to the sac wall. Section of these fibres should be avoided, if possible, as they often surround and entwine the elements of the cord proper. If their continuity with the cord has been sacrificed already in their development, no attempt should be made to replace the fragments, but the latter should be removed with as much of the sac wall as seems necessary.

Piéchaud describes the following technique, first having called attention to the necessity of rigid antiseptic measures. The sac is first incised and its contents inspected. After this the sac wall is excised by a circular incision as near the bony orifice as possible, at a distance varying according to the distribution of the dilated venous plexus surrounding the orifice, which should, of course, be carefully avoided in order that the field of operation may not be obscured by the effusion of venous blood. The operator, after the reduction of the cord, then

closes the orifice by suturing with catgut the loosened connective tissue comprising the collar, made up of the lining membrane and its subjacent tissue in the vicinity of the base of the tumor.

The wound should be protected by covering it with an antiseptic dressing.

Infection of the incision through soiling with the fecal discharges should be avoided.

Care must be observed in preventing the free evacuation of the cerebro-spinal fluid upon incision of the sac. For this purpose the finger may be used to protect the communication with the cerebro-spinal axis, or a tampon of gauze may be introduced into the opening.

Broca advises certain limitations relative to surgical procedure. He, in the first place, abstains from operating in those tumors which augment rapidly in an infant presenting hydrocephalus. He excludes also those cases in which the tumor is small and protected by thick integument that is not liable to ulceration. Piéchaud looks upon the operation as of rapid and easy accomplishment where complicated procedures are dispensed with. He records seven operations performed by himself, with five successes, in which the simple sero-aponeurotic occlusion was followed by permanent benefit, the operation taking but a few minutes and dealing with fair-sized tumors. He recommends that chloroform be dispensed with in very young infants. In cases where the presence of a tumor menaces the life of the child (by ulceration, for instance), Piéchaud operates even in the face of hydrocephalus.

It is the opinion, however, of most observers that infection readily occurs as the result of operation. Could this danger be avoided, we should have still to face the consequence of the disturbed pressure in the cerebral circulation, due to the sudden loss of fluid, by the opening of the cranio-vertebral cavity.

This latter risk is greatly increased in conditions of undue intracranial pressure, as in hydrocephalus. According to Wernitz the danger of infection is not the only indication opposing operation, but the uselessness of the surgical interference, considered from the statistics which have been presented by different writers, in his opinion restricts the surgical treatment of spinæ bifidæ to an extremely narrow field, namely, to conditions of simple meningocele.

The statistics collected by Wernitz, covering 153 operations, show a total of 87 recoveries and 76 deaths.

REFERENCES.

1. BROCA, A.: Prolapsus du rectum. *Traité des Maladies de l'Enfance*, par Grancher, Comby, Marfan, tome ii., Paris, 1898.
2. FOSTER: *Text-book of Physiology*, 7th edition, 1897.
3. HILL, LEONARD: *The Physiology and Pathology of the Cerebral Circulation*, London, 1896.
4. HOLT, L. EMMETT: *The Diseases of Infancy and Childhood*. D. Appleton & Co., New York, 1897.
5. HOLT, L. EMMETT, and VAN GIESON, I.: Reprint from *Jour. of Nervous and Mental Diseases*, December, 1890.
6. HUBER, FRANCIS: *Archives of Pediatrics*, vol. xvi., No. 1.
7. MANTON, W. P.: *Jewett's Practice of Obstetrics by American Authors*. Lea Brothers & Co., New York and Philadelphia, 1899.
8. MARCY, H. O.: *The Surgical Treatment of Spina Bifida*. Reprint from the *Annals of Surgery*, 1895.
9. MAYO-ROBSON, A. W.: *Transactions of the Clinical Society of London*. Reprint in *New York Med. Jour.*, vol. xviii., April 25, 1885.
10. MINOT, CHARLES SEDGWICK: *Human Embryology*. New York, William Wood & Co., 1892.
11. MORTON, JAMES: *The Treatment of Spina Bifida by a New Method*. London, 1887.
12. PIÉCHAUD, T.: *Traité des Maladies de l'Enfance*, par Grancher, Comby, Marfan, Paris, 1898, tome ii.
13. RECKLINGHAUSEN, F. VON: *Untersuchungen über die S. B.* Berlin, 1886.
14. RECH, J.: *Ueber Hirn- und Rückenmarkshernien*. Inaugural Dissertation, Heidelberg, 1896.
15. ROTCH, T. M.: *Pediatrics*. J. B. Lippincott & Co., Philadelphia, 1896.
16. SAYRE, L. A.: *New York Jour. of Med.*, 1849.
17. THOMSON, ST. CLAIR: *The Cerebro-Spinal Fluid*. New York, William Wood & Co., 1899.
18. WERNITZ, A.: *Die Spina Bifida in aetiologischer und klinischer Beziehung*. Inaugural Dissertation, Dorpat, 1880.
19. ZIEGLER, E.: *Lehrb. d. allgemeinen pathologischen Anatomie und Pathogenese*, Erster Band. Jena, 1889.

VAGINAL HYSTEROMYOMECTOMY AND MORCELLATION OF
THE MYOMATOUS UTERUS.

BY

O. THIENHAUS, M.D.,
Milwaukee, Wis.

At the last German Gynecological Congress in Berlin, where the myoma operations were discussed in every aspect, nothing made a greater impression upon me than these words of

Schauta, of Vienna: "We must confess that the vaginal morcellation of the myomatous uterus, extending sometimes even to the navel, belongs among the most difficult operations and to that surgery which demands the greatest skill, dexterity, steadiness, and calmness on the part of the operator and his assistants; yet we will begrudge no pains in performing this surgical measure, convinced that when successful we have gained by it the greatest advantage for our patient by sparing her abdominal laparotomy and its sequelæ." Compare these words with those of A. Lapthorn Smith, of Montreal, in his "Observations on Pryor's Method of Removing the Fibroid Uterus," read before the American Gynecological Society at Washington: "Although I have seen two of the greatest exponents of vaginal morcellation—namely, Ségond, of Paris, and Landau, of Berlin—performing this operation several times, I feel that the operation cannot be too strongly condemned." At once the question arises: What are the reasons for this contradiction?

After Von Esmarch's paper on "Carcinoma of the Rectum" before the International Congress in Copenhagen 1884, Frank, of Dublin, comprehending the *facit* of the discussion, remarked that in his opinion the indications for operations for carcinoma of the rectum depended much more upon the nationality of the surgeon than upon the condition of the patient.² Can we make the same statement in reference to the myoma operations and thereby explain the difference of opinion? Or are we perhaps justified in using the proverb, *tempora mutantur, ac nos mutamur in illis*? In short, the following questions have to be decided:

1. Have vaginal hysteromyomectomy and morcellation advantages when compared with abdominal operations on the myomatous uterus, and what are they?

2. In what forms of myoma uteri should vaginal morcellation be employed?

It is perhaps unnecessary to state here that myomata uteri which do not give rise to symptoms of any kind are not necessarily subjects for interference, and that in myomectomies and hysteromyomectomies, as well through the abdomen as through the vagina, every operator has a certain unavoidable death rate and must, with Ambroise Paré, confess concerning the safety of his patient, "Je te pense, Dieu te guérira," that these radical surgical measures ought only to be used as a last resort.

It is not my intention to speak here of the value or uselessness of the palliative methods of treatment, the hemostatics (ergot cure, stypticin, gelatin, ferripyrin, etc.), thyroid and mammary extract, Apostoli's electricity. Nor do I intend to criticise curettement and vaginal ligature of the uterine arteries as symptomatic cures for myomata (they may be of value in selected cases). But I should like to call your attention to the fact that, concerning the *necessity* for *radical* surgical methods, Olshausen,³ up to 1897, from 200 cases of myoma which he observed in his private practice, operated on but 33 = 16.5 per cent, and in the following three years, 1897 to 1899, from 320 further cases in his private practice, on but 53 = 16.6 per cent.

Returning, after this brief divergence, to my query—has vaginal morcellation advantages when compared with abdominal hysterectomy?—it is evident that it is coincident with the question in general: why, *ceteris paribus*, do we in gynecological work prefer the vaginal route rather than suprapubic section? Although this question has been much discussed, and though the advantages of the vaginal route have been pointed out by so many, I repeat here briefly what I have already stated in my monograph on “*Retroversio Flexio Uteri Mobilis et Fixata: Its Conservative and Operative Treatment*”:

“1. It is to be noticed that every operator who has used the vaginal as well as the abdominal incision must have observed that the so-called abdominal shock, both during the operation and during the first few days following the operation, is much more severe following the abdominal than the vaginal incision. When we observe an anesthetized patient at the moment of the incision of the abdominal peritoneum, when the air comes in contact with the peritoneum, we may recognize that there is both respiratory and cardiac depression, which may last in some cases twenty-four hours, or even more, according to the injuries inflicted upon the peritoneum, as Cleveland has shown in his paper ‘On Surgical Shock.’ I have observed, as a rule, during my operations in the peritoneal cavity by the vaginal route, that, with asepsis and no complications, there is seldom shock during operation. Sometimes even within a day the patient's condition is as if no operation had been performed, and she is enabled to resume active life much earlier than after abdominal work.

“2. Kleinwächter says in his work, ‘*Uterus Verlagerungen, operative Uterus-Fixationen und die aus letzteren re-*

sultierenden Geburtsstörungen,' that it is more difficult to perform aseptic vaginal operations than aseptic abdominal operations. I am inclined to the opposite opinion, and say that peritoneal sepsis much more frequently follows abdominal than vaginal section. We all must confess that in total extirpation of a carcinomatous uterus, where we take the vaginal route because the neoplasm has not yet extended to the broad ligaments, the fear of peritoneal infection is much less than if we are compelled to do Freund's operation or the modification by Ries (Chicago) or Rumpf (Berlin). This has been amply demonstrated. For the same but not only reason, as we will see, many operators, and I have followed the same methods, remove the myomatous uterus, enlarged even to the navel, by the vaginal route, and prefer it in cases of chronic metritis and adnexitis associated with pyosalpinx or tubo-ovarian abscesses or abscesses of the broad ligament.⁴ The reason why vaginal operations are seldom followed by septic infection is, first, due to the small peritoneal surface which comes in contact with our hands and instruments; second, because of the possibility of draining the peritoneal cavity through the lowest part; and even when there is a lesion of the bowel which is followed by perforation and fecal fistulæ, we very often see recovery, while by abdominal incision such an occurrence, if not observed during the operation, is nearly always followed by general peritonitis and death.

"3. Every opening of the peritoneum through the abdomen may be followed by ileus, and there are cases cited by Olshausen and Jacobs²² in which uncomplicated ventrofixation was subsequently followed by ileus. We all know that after every abdominal incision peritoneal adhesions develop, most of them disappearing later by absorption, generally in aseptic cases; but ileus may occur even years after an abdominal incision, owing to these adhesions.

"4. The danger of hernia always exists after an abdominal incision, mostly in cases where the healing is not by primary intention, and to prevent this patients are required to wear a binder one-half year to one year, which interferes with their doing active work. By the separate suture of the peritoneum, fascia with muscle, and skin, this can be reduced to 8 per cent, as Olshausen and Winter have shown in their statistics. Using through-and-through sutures this percentage rises to 20 and 30 per cent."⁵

These facts cannot be denied by anybody who is familiar

with abdominal as well as vaginal celiotomy, but there is the point: When we look through the literature we usually find that surgeons who have only been inclined to abdominal work, and have either never tried the vaginal route or abandoned it after a few unsuccessful attempts, are the speaking adversaries, assuming that the operation is too difficult. What may be difficult for one operator is not necessarily difficult for another, and difficulties ought not to be a barrier against any method which has acknowledged superior advantages for the benefit of the patient. Supravaginal amputation of the myomatous uterus with *extraperitoneal* treatment of the stump is, without doubt, the easiest and quickest way of performing abdominal hysteromyomectomy; but, as it was shown afterward that the after-treatment was cumbersome, that very often wearisome cervico-abdominal fistulæ, resisting every kind of treatment, remained, and hernia was almost inevitable, it had to give way to the more difficult operation, the hysteromyomectomy with *intraperitoneal* or *retroperitoneal* treatment of the stump. This operation, again, be it performed after Zweifel's or the Pryor-Kelly method, cannot be compared concerning difficulties with *total* abdominal hysteromyomectomy either after Martin's or Doyen's method, or a combined vagino-abdominal method (the latter being the simplest and quickest). But as it was shown that the stump remaining in the abdomen could cause so-called "stump exudates" (Abel⁶ cites from 64 cases 9 exudates of the stump), and, furthermore, that malignant growths could originate (Schauta⁷ collected 10 cases), Bumm⁸ recommended the younger surgeons to begin their gynecological work with the more difficult but more expedient operation to the patient, the total hysteromyomectomy, and with full justification. The patient with pain in his abdomen for which an operation is necessary, who comes to a physician, wants to be relieved of his pain, and naturally by that method which has the least danger. Whatever may be the underlying anatomical cause of this disturbance may certainly be an object of primary interest to the scientific surgeon hunting for the most interesting anatomical substrata for his record book, but for the patient it is always a query of trifling importance and secondary nature. I need not speak here of the sad and depressing experience, which is seldom spared to any surgeon, when, some three to fifteen months after a laparotomy, the patient returns complaining of still worse symptoms than before, due to adhesions

or ventral hernia. As we have a tendency nowadays, in surgery of the gall bladder, to perform the more difficult cystectomy, and not cystostomy, in all cases in which alterations of this organ give us the slightest suspicion that, if left in the abdomen, adhesions might possibly develop with the duodenum, pylorus, or intestines, with necessary gastro-intestinal troubles, so we will have to follow the same principles in gynecological work and perform those operations by which future disturbances are best avoided. It often happens that when the surgeon meets disaster by one method he condemns it indiscriminately. I remember the time when a well-known gynecologist in Berlin warned his students against abdominal myomectomy as a most dangerous operation, for the only reason that he had lost three or four of those cases that year. The fact has now been revealed that abdominal as well as vaginal myomectomy gives most satisfactory results in carefully selected cases; and this conservative operation ought, when possible, to be the operation *par excellence* in females up to the age of 40, because it protects the woman against premature cachexia uteripriva and preserves to her the possibility of posterity. Still, one goes too far when he attempts to save uteri from which large numbers of myomatous growths must be removed, as he never knows how many other nodules, scattered throughout the uterus but not perceivable whilst operating, may remain and give rise later on to serious sequelæ.

Our second question was: In which cases of myoma uteri is vaginal hysteromyomectomy and morcellation to be employed, provided, first, that radical surgical intervention is indicated, and, second, that myomectomy through the vagina or from the abdomen, as already stated, is not feasible?

We may answer as follows:

1. It is advisable to limit vaginal morcellation of myomatous uteri to tumors not extending above the navel.
2. It must be possible in narcosis to displace the tumor into the small pelvis, either from the vagina by forceps or from the abdomen by pressure. This involves:
3. That cases with large adhesions of the myomatous uterus to other abdominal organs are excluded from vaginal morcellation.
4. The breadth of the vagina and the rigidity of its tissue (nullipara or multipara) must be compared in the individual case with the size of the myomatous uterus; but, of course,

this is only a factor of minor importance, and can easily be overcome by lateral incisions through the vaginal outlet, directed and sometimes almost extending to the tuber ischii.

5. Myomatous tumors which have grown in a transverse direction and have developed into the broad ligament are better excluded from vaginal hysterectomy and morcellation, because it is (as, for instance, in cases in which the tumor has grown round the ureter) sometimes impossible to save the latter and the bladder from injury while operating. In such cases it is useful to make use of ureteral catheterization and to leave the catheter *in situ* while operating, as Kelly⁹ has advised in his vaginal hysterectomy for cancer of the cervix.

6. In cases which are exhausted from menorrhagia or continuous metrorrhagia, and which show that wax-like color which is typical in women suffering from submucous myomata, vaginal hysterectomy and morcellation is the best method, for two reasons: first, because these patients are more susceptible to peritoneal septic infections because of degeneration of the heart muscle and lack of vital energy, and, second, yield much more easily to subsequent operative shock. Since it has been confirmed by authors with great practical experience, as Schauta, Olshausen, etc., that peritoneal sepsis and shock much more frequently follow abdominal section, vaginal celiotomy ought to be preferred, even though its performance requires a longer time. Schauta¹⁰ records that he used the vaginal route in removing a movable myomatous uterus, four pounds in weight and extending two fingers' breadth above the navel, because of the extreme anemia of the patient (the blood containing but thirty-five per cent of hemoglobin); and Fritsch¹¹ says: "I would rather submit a woman, suffering from serious anemia because of myoma uteri, to a vaginal hysterectomy of one hour's duration than to an abdominal section of ten minutes." It has been stated that *abdominal* supra-vaginal amputation of the myomatous uterus can, first, be much more quickly performed in such cases, and, second, with much less loss of blood. Conceding the first point, I must differ with the second, as we all know that when we draw down the uterus in vaginal hysterectomy with forceps and hold it down tightly, almost no blood is lost. This procedure, by which we make torsion of the broad ligaments with the uterine arteries, ought to be considered much more in obstetrical cases in which hemorrhages from lacerations of the cervix and atonia uteri demand the speediest surgical interven-

tion. Furthermore, when the drawing down of the uterus does not stop bleeding in vaginal hysteromyomectomy, this can easily be assured by prophylactic ligature of the broad ligaments or by preventively using clamps or Tuffier's or Thumim's angiotribe. Which of these methods one prefers is immaterial, just as whether or not one uses Landau's method of first dissecting the uterus and then clamping the broad ligaments or preventively clamping and operating *in situ*, as already stated. *Chacun à son goût.* I have used clamps in six of my cases, and shall use later Thumim's instrument; but when one uses clamps one must take precautions and put on each ligament, not one clamp, as I once observed a surgeon doing, and where the slipping of the ovarian artery caused fatal secondary hemorrhage, but at least two or more. It is unnecessary to expatiate here on the advantages and disadvantages of the instruments mentioned. This question has been thoroughly threshed over before the Section on Obstetrics and Diseases of Women at the fifty-first annual meeting of the American Medical Association, and I fully agree with Carstens,¹² of Detroit, who said: "I do not care whether the angiotribe is a plumber's tool or a sewer-digger's tool or some horse-doctor's; if I want to do my patient good I use it, no matter how big it is."

I must point out here that in all large tumors of the myomatous uterus one must, in using the vaginal route, have the patient fully prepared for laparotomy, so as to use, if necessary, the combined vagino-abdominal hysteromyomectomy. This latter method, in which one begins with the circumcision of the vaginal portion of the cervix and puts a clamp on each side on the uterine arteries after opening the posterior cul-de-sac and pushing up the bladder, was first recommended by Bardenheuer¹³ in 1881, and afterward recommended and used by Wathen (Louisville), Tournay (Brussels), Delagénière (Paris), and Bumm (Basel). Döderlein (Tübingen) cites 26 cases operated after this combined method without any mortality. It allows us to perform the total hysteromyomectomy in the quickest possible manner, and supersedes in this respect every kind of total abdominal hysteromyomectomy. It is quite probable, if I may be allowed to prophesy, that the future will reveal it worthy of consideration.

I take the liberty now of reviewing the statistics of the cases of myoma uteri cited before the last Gynecological Congress in Berlin and the International Congress in Amsterdam, as

operated by vaginal hysterectomy and morcellation, with the result of the operations. As the originals are not at hand, I can only state them after the referata in the *Centralblatt für Gynäkologie*:

Congress in Berlin, 1898 : ¹⁵	Cases	Mortality.
Von Rosthorn (Prag).....	26	1
Amann (Munich) (25 cases operated with Thumim's angiotribe).....	59	0
Schauta (Vienna).....	146	5
Chrobak (Vienna).....	160	5
Thorn (Magdeburg) (33 morcellement).....	43	2
Congress in Amsterdam, 1899 : ¹⁶		
Doyen (Paris) (27 cases Paris, 15 Rheims).....	42	0
Destrauch (Moscow) (uses elastic ligatures)	76	0
Villar (Bordeaux).....	10	0
Schauta (Vienna) (2 cases added to his above 146).....	2	0
	<hr/> 564	<hr/> 13

Total mortality = 2.3 per cent.

These statistics contain the vaginal hysteromyomectomies as well as the vaginal morcellations.

Furthermore, Wertheim¹⁷ cites 27 cases of vaginal morcellation, Gottschalk 8 cases, and Regnier 53 cases, but, as it is not strictly stated whether or not they had mortality, I omitted them from the above list. As a comparison Schauta adds his total abdominal hysteromyomectomies (106 cases) with total mortality of 16 = 15 per cent, but, as some deaths were not directly from operation, 9 per cent.

My own experience in vaginal hysteromyomectomy and morcellement is 8 cases with 1 death. In the latter, a nullipara, the myoma extended almost to the navel. I began the operation by the vaginal route, but it had to be abandoned because of dense adhesions with the sigmoid flexure on the left side and an ovarian and pelvic cyst on the right; furthermore, two tablespoonfuls of pus were discovered whilst dissecting the myoma; though even then, to avoid peritonitis and because the woman was very anemic, I made every effort to get the tumor through the vagina, it was impossible to draw it down, and vagino-abdominal hysterectomy had to be performed. Almost no blood was lost whilst operating. She died three days after operation, showing the condition which we observe when sepsis is combined with a high degree of anemia, here due to profuse metrorrhagias before operation. Some are prone to call it shock. I should like to give it its real name—peri-

toneal septic infection, produced in my case through the bacteria in the pus focus.

It has been said that vaginal morcellation does not look elegant. Certainly it does not make the same brilliant impression as does, for example, the incision for an explorative laparotomy extending from the tip of the processus ensiformis to the tuberculum ossis pubis, allowing the surgeon to grasp through the abdomen and to search from the right ovary to the appendix, the gall bladder, pylorus, and back to the sigmoid flexure and the left ovary, to find as a result not even a Gersuny's adhesion¹⁸ on the lower portion of the sigmoid romanum to clear up the situation, but to reveal that the patient is suffering from the puzzling disease, hysteria! The incision is most excellent, and saves the brain of the performer from over-strain in diagnosis; but whether or not it is for the benefit of the patient I leave for the reader to answer, who may compare it with the words of Mikulicz:¹⁹ "Not the idea of making large incisions to overcome difficulties in diagnosis, but the idea that when a surgeon makes an explorative laparotomy he thereby confesses his ignorance, is real surgery and surgery of the future."

At the close of my paper it may be well understood that I intend to demonstrate that vaginal hysterectomy and morcellation, which, as Landau²⁰ says, exhausts the operator but not the patient, has without doubt a well-justified place in gynecological surgery. The main object of all operative work is to benefit the patient;²¹ and I hope that many a surgeon may endeavor, prompted by the excellent results in the above statistics, to employ this method for the benefit of himself, and, what is most important, for the benefit of his patients. Of course, *nemo nascitur chirurgus*, but exercise makes perfect.

BIBLIOGRAPHY.

1. AMERICAN JOURNAL OF OBSTETRICS, 1900, p. 765.
2. KRÖNLEIN: Ueber die Resultate der Operation des Mastdarm-Carcinoms. Archiv für Chirurgie, 1900, p. 310.
3. OLSHAUSEN: Beitrag zur conservativen Chirurgie der Uterus-myome. Bericht über die Verhandlungen der deutschen Gesellschaft für Chirurgie, XXIX. Congress. Centralblatt für Chirurgie, 1900, p. 121.
4. Archiv für Gynäkologie, Bd. lix., Heft 1.
5. Handbuch der practischen Chirurgie von Von Bergmann, Bruns, und Mikulicz, Lieferung viii., p. 741.
6. Centralblatt für Gynäkologie, 1899, p. 1122.
7. Ibidem.

8. Verhandlungen des letzten deutschen Gynäkologen-Congresses in Berlin.
9. Journal American Medical Association, May 19, 1900.
10. Centralblatt für Gynäkologie, 1899, p. 426.
11. Ibidem, p. 674.
12. Journal American Medical Association, August 4, 1900, p. 273.
13. Delagénère, Progrès méd., No. 16, 1898, cited in the American Year Book of Medicine and Surgery, 1900.
14. Beiträge zur Geburtshilfe und Gynäkologie, ii., p. 1, 1899.
15. Centralblatt für Gynäkologie, 1899, pp. 648, 650, 675.
16. Ibidem, p. 673.
18. Verhandlungen des deutschen Chirurgen-Congresses, 1899.
19. Handbuch der practischen Chirurgie von Von Bergmann, Bruns, und Mikulicz.
20. Centralblatt für Gynäkologie, p. 650.
21. Journal American Medical Association, August 4, 1900.
22. Veit's Handbuch der Gynäkologie.

CHRONIC CONSTIPATION OF INFANTS AND YOUNG CHILDREN.¹

BY

GEORGE WYTHE COOK, M.D.,
Washington, D. C.

It is presumed that no one will deny that the integrity—and by integrity I mean proper performance of function—of the *entire* alimentary canal is essential to good health in the individual, and that this is especially so in the case of infants and young children.

Much attention has been paid to the upper portion of this canal, both as to food and digestive aids, but I am persuaded that its lower segment has been overlooked or too much neglected by the physician, its care being left almost wholly to the meagre resources of the mother and nurse. Dr. S. B. Birch, in his book on "Constipation of the Bowels," says: "*In early childhood* there is an almost inconceivable amount of mismanagement, dietetic as well as hygienic; and such mismanagement often tends to lay the foundation of a permanently constipated habit. . . . Ignorance of Nature's simple and admirable laws, and absence of common sense, among mothers and nurses, are indisputable agencies in daily opera-

¹ Read before the Washington Obstetrical and Gynecological Society, arch 16, 1900.

tion among the less educated classes. Among the rich, too, mismanagement may proceed from similar causes; they may be well acquainted with the general *outlines* of proper management, but they know not how to put them into practice in detail. *Some* practitioners of the highest genius and scientific attainments never charge their minds with an intimate knowledge of minute details in such matters, and for this reason they are apt to regard them as beneath the dignity of the physician and as fit only for the minds of nurses. They give good but vague general orders, which are not properly apprehended or may be entirely misconstrued. If some really important but apparently trifling explanation is required by the mother or nurse, the latter is deferred to as quite competent to follow out matters in her own way. For how can one who has never considered such trifles as worthy of his careful, or perhaps even casual, reflection be capable of instilling important minutiae into the minds of others? Little points of this kind generally require to be impressed in clearly defined manner and with lucid and unmistakable language."

While the proper elaboration of digestive materials is the first and indispensable process to the building-up of the organism, it is none the less important to its health that the putrefying refuse material be promptly evacuated, lest by its undue retention noxious products be absorbed to the detriment of the body. For the function of the colon is chiefly an absorptive one, as at its beginning its contents are thin and watery, but as it progresses it becomes more consistent and formed, and the gut itself may suffer from inordinate distension.

Constipation may be said to be that condition in which the frequency of evacuation of the bowels is below the average and the feces are drier and harder than normal. Ordinarily, during the first six months of life, the infant has two movements daily. There may be more or less, but the determination as to whether constipation exists will depend upon the character of the stools.

Among the causes of constipation may be mentioned congenital deformities, fissure of the anus, hemorrhoids; and Jacobi says that undue length of the descending colon, with multiplicity of flexures which compress each other, may cause it, and this condition is not relieved until the sixth or seventh year of life. Deficient secretion of the intestinal and accessory glands, insufficient or blunted muscular power, narcotics, not infrequently are a cause of deficient secretion and dulled mus-

cular sensibility. Rachitical diathesis is a cause of atony of the muscles of the intestine as of muscles elsewhere. Defective food, both in breast-fed infants as well as among those who are artificially nourished where there may be an excess of proteids or deficiency of fats in the milk, or both inequalities, may exist. And in older children too much starchy food may be given and not enough of a succulent character.

Constipation may exist without giving rise to any particular symptoms, and it is not unusual to hear the remark that "a constipated baby is a good one." More commonly, however, there are flatulence and colicky pains; and here is where the danger of resort to narcotics is presented, and with their administration the constipation is not only aggravated, but the digestive process itself is seriously impaired. An apparent constipation may exist in poorly nourished babies where there is deficiency of food, the child having only one small movement in two or three days.

To determine what particular part of the canal is at fault requires most thoughtful consideration, both as to diet and the character of the stools. Physicians are not sufficiently observant of this latter. The feces should be most carefully inspected, and, if necessary, a chemical analysis of them should be made. If a slight stimulation of the rectum procures an almost normal discharge, the probability is that the trouble is due to atony of this viscus. Irritability of the child, with flatulence and offensive grayish stools, indicates that digestion is defective.

The treatment of chronic constipation in infants and young children is attended with many difficulties, and may not be dismissed with the prescription of a purgative or a few doses of laxative medicine, but requires most careful and painstaking consideration. It may not be inapt to remark here that the difficulty may often be avoided by the systematic establishment of regular habits in infants soon after birth. Even infants only a few months old may very easily be taught to use a chamber or chair for their evacuations, if they are systematically trained to do so, much to their comfort as well as to that of those who may have their management. And it is just as important for older children to have a regular time for this function as it is for adults.

If the cause of the constipation be due to any curable deformity, this should be remedied at once. I have known a slight fissure of the anus to cause great dread of an evacuation of the

bowels on the part of a child $2\frac{1}{2}$ years old, this contributing to keep up an already existing constipation. This fissure was doubtless caused by the passage of dry, hardened feces.

If there is deficient secretion, due to the administration of narcotics—which are too frequently surreptitiously given, and sometimes, I regret to say, by advice of physicians—this should be corrected by withdrawal of the cause. Constipation is sometimes due to fluid contents of the colon being too rapidly absorbed; in that case more water should be given. Indeed, I believe that as a general rule not enough water is given to infants.

In children with good digestive organs and a proper diet there should be no constipation; but, unfortunately, trivial circumstances may alter these conditions, and a neglected or mismanaged digestive error may eventuate in a troublesome chronic constipation. A healthy nurse, with a good appetite and an abundant supply of nitrogenous food, but of indolent habits, may produce too much proteids in her milk and thus engender a constipated habit in the nursling. This, of course, is to be remedied by regulating the diet and exercise of the nurse. These have a great influence upon the character of the milk, as shown by the experiments of Rotch. If the infant be bottle-fed it will be necessary to have its milk prepared by accurate prescription, diminishing the proteids and increasing the fat according to the exigency of the case, as may so readily be done at the excellent milk laboratories that are to be found in most of the large cities. But should these not be available the same results may be accomplished by the addition to the whole milk of from five to ten per cent of good cream, fifteen to thirty per cent of water or oatmeal gruel, and one to two teaspoonfuls of sugar—this for a child of from 10 to 15 months of age. The proportions cannot be definitely stated, but must be determined by careful study of each individual case. It is better not to give much starchy food to children inclined to constipation. Meat juice and broths are valuable. Fruits, such as oranges, baked apples, stewed prunes, and ripe peaches, are desirable aids.

Suppositories are valuable when only a slight stimulation of the rectum seems to be necessary in order to begin the movement and induce a habit; and the oiled cone of paper is effective in some cases. When this is not sufficiently active a soap suppository may be used, but this should not be continued too frequently.

Where the feces are hard and dry I can see no objection to

the daily use of small enemata of salt water, or soap and water, or, better still, olive oil. I have found benefit from the use of massage over the course of the colon, the operation being performed in the direction the contents of the gut should take. I have not relied upon this procedure to the exclusion of other measures.

Medicinal agents are very unreliable in the treatment of chronic constipation in infants and young children, but the temptation is very great to give repeated doses of some active cathartic, that an immediate result may be seen. This does no good and is very bad practice. An occasional dose of calomel is beneficial when the stools are white, dry, and offensive. *Nux vomica*, to improve the muscular walls of the intestine, is proper. *Belladonna*, *cascara*, *rhubarb*, bicarbonate of soda, and phosphate of sodium may be tried, but they are disappointing.

The best results are obtained by the most careful attention to diet, exercise, and being much in the open air, avoidance of living in superheated apartments, massage, regularity of time for the evacuation, and the squatting posture at the time of defecation without the intervention of chair or seat. This latter, of course, is only available in older children.

I have omitted any mention of many remedies that have been proposed, because I believe them to be inefficient. I have tried a number without much benefit, and, as I have just stated, I believe the most satisfaction will be obtained by careful regulation of the diet and judicious attention to hygienic conditions.

3 THOMAS CIRCLE.

THE OBJECTIONS TO SYMPHYSEOTOMY AND HOW TO OVERCOME THEM.¹

BY

WILLIAM P. CARR, M.D.,
Washington, D. C.

(With two charts and four illustrations.)

IN a paper read before this Society two years ago I reported two cases of symphyseotomy in which both mothers and one child were saved. At that time I pointed out what I consid-

¹ Read before the Washington Obstetrical and Gynecological Society, March 2, 1900.

ered the principal dangers and objections to the operation and considered the methods of avoiding them. I have now two additional cases to report in which both mothers and both children were saved; and this additional experience has so strongly convinced me that the success of the operation depends upon a proper technique, and that the best technique is not that now in general use, that I shall again ask your indulgence while I give my views upon these important points.

CASE III. was an Irishwoman weighing 200 pounds. She had been previously delivered of a dead child by craniotomy,

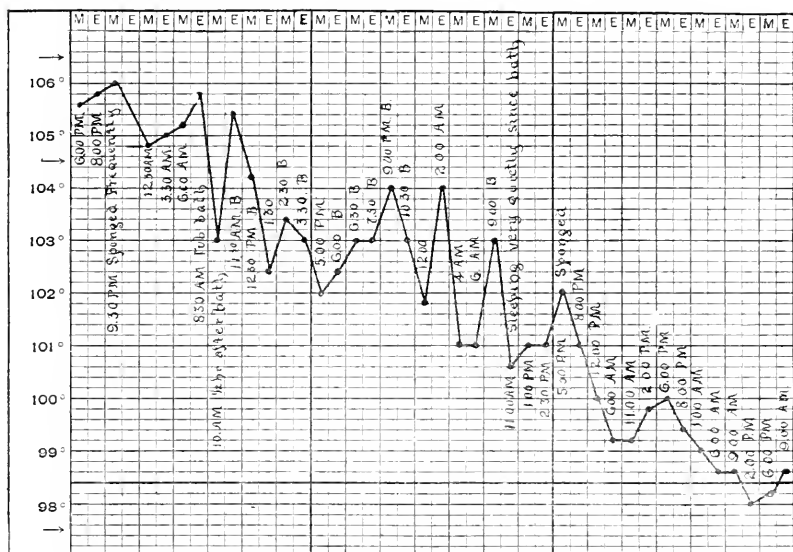


CHART I.—CASE III.

and I had given her some treatment for laceration of the perineum and endometritis following this operation.

June 6, 1899, her second labor began in the afternoon. Dr. P. E. McDonnold attended her. She had strong pains all night, but made no progress. I saw her in consultation on the morning of June 7. The os was pretty well dilated by the bag of waters, but the head could not be made to engage by the use of forceps. Conjugate: antero-posterior diameter $6\frac{1}{2}$ inches outside measurement, other diameters normal; estimated internal antero-posterior diameter, $2\frac{3}{4}$ inches. Preparations were at once made for the operation of symphyseotomy, and at 1 o'clock the operation was done with the assistance of Drs. McDonnold, J. R. Wellington, and Sterling Ruffin.

propped up with pillows from the first, and in three weeks she was able to get out of bed into a chair. In that intolerably hot room, with a woman weighing 200 pounds, it would have been torture to have used adhesive strips or even a tight canvas band, and without the wiring the patient would have been confined to bed at least two weeks longer than she was.

In spite of her size and unfavorable surroundings she had a comfortable convalescence and a perfect recovery. There is not the slightest lameness or other bad effect produced by the operation. The child weighed 8 pounds and was well formed. He is now remarkably healthy and large for his age.

CASE IV., a white primipara, 26 years old, was operated upon at her home September 2, 1899, with the assistance of Drs. Middleton, P. E. McDonnold, and S. Ruffin. She was a slight woman with a justo-minor pelvis; antero-posterior diameter, $3\frac{1}{2}$ inches; transverse, 4 inches. After twelve hours of labor and six hours of strong pains the os was well dilated by the bag of waters, head not engaged. I prepared for the operation, ruptured the waters, and tried forceps, but could not get the head to engage.

The operation was then quickly and easily done, the incision being made high so that the lower angle of the wound was two inches above the urinary meatus. The bones were easily freed and a thick piece of gauze placed behind the symphysis in place of a metal guard. Division was easily accomplished with an ordinary scalpel and the child delivered with forceps. The bones separated about $2\frac{1}{4}$ inches during delivery.

In this case also the bones were united with two strong silver sutures, and I was delighted with the result. There was not a bad symptom and none of the usual discomfort during convalescence, and the recovery was perfect. The patient was allowed to turn carefully on her side from the first. She sat up in bed in three weeks and was walking at the end of five weeks. The child was a well-developed, $6\frac{3}{4}$ -pound boy and is still alive and thriving.

There can be no question that of late symphyseotomy has fallen somewhat into disrepute, at least in this country. Many unfavorable comments and experiences have been recorded in the journals of the past year, and little has been written in its favor. I am sorry to see this tendency, for I believe it to be a valuable operation in suitable cases. This state of affairs has come, I think, from a failure to appreciate beforehand

and guard against its dangers, and more than all, I believe, from the tedious and painful convalescence which has been the rule rather than the exception. Many have conceived it to be a trivial operation, have performed it without a proper realization of its difficulties and dangers, and have been disappointed. Lusk says of the operation: "Its worst enemies are those who preach its simplicity and who ignore the risks involved in its employment. It is not in all cases easy of accomplishment. The avoidance of hemorrhage and lacerations calls for constant vigilance, and the after-treatment involves an infinite amount of painstaking." I heartily agree with Lusk in this statement, and particularly in regard to the care and pains necessary in the after-treatment when the operation is done in the ordinary manner.

Let us examine the dangers and objections *seriatim* and see what can be done to avoid them.

First, there is the danger from the anesthetic and from shock. These are unavoidable, and may be very serious in patients exhausted by long labor, by the use of forceps, or by complicating disease. But it must be remembered that they are common to all operations, and are rather less in symphyseotomy than in its alternatives, Cesarean section or craniotomy. Much may also be done to avoid these dangers by placing the operation on a sound basis and having it generally recognized as a beneficent measure, so that it will not be so often delayed and used as a last resort with the patient *in extremis*.

Second, there is the danger of previous infection from digital examinations, forceps, and other manipulations. This danger is an unnecessary but very real one. It cannot properly be charged against the operation, but it is often difficult to prove whether infection took place previous to or during the operation. A septic infection of the uterus may cause a wound to suppurate when it would otherwise have healed by first intention. This danger may also be greatly lessened by having it generally recognized and by having symphyseotomy generally recognized as the operation of election in proper cases, and not regarded as a last resort.

Third, there is the danger of attempting the operation in unsuitable cases, more especially of persisting and using too much force where the pelvis is too small for a safe symphyseotomy. Theoretically the indications and contraindications are given in all text books on obstetrics, and I need not men-

¹ Dennis' "System of Surgery," vol. iv., p. 80.

tion them here. Suffice it to say that, in America at least, the majority of writers limit the operation in simple flattened pelvises to a conjugata vera of $2\frac{3}{4}$ to $3\frac{1}{2}$ inches and in justo-minor pelvises to $3\frac{1}{4}$ to 4 inches. A few would prefer version between 3 and $3\frac{1}{2}$ inches in the flattened pelvis. This makes a range of three-quarters of an inch in the conjugate diameter, and, where the pelvis approaches either limit, requires accurate measurement to one-eighth of an inch. A mistake of one-eighth of an inch, or certainly of one-quarter of an inch, may render the operation dangerous or impossible on the one hand or unnecessary on the other. I believe that mistakes of this kind, where the pelvis was really too small, but where the delivery has been accomplished by force, have been responsible for many of the fatal cases.

But who can measure a pelvis with certainty within such exact limits? I would like to know how many members of this Society would claim such accuracy—and we are presumably a society of experts. Even if the pelvis could be accurately measured, we must admit that children's heads vary in size. There is a normal average that we take for granted, and that is the best we can do. The rule generally works, but not always by any means. Some of our most careful operators have had the child born naturally while preparing for a symphyseotomy or Cesarean section; and, on the other hand, a good many symphyseotomies have been attempted when the pelvis was too small, and craniotomy became necessary even after dividing the symphysis. It is true that Farabœuf has devised an instrument which he calls the "mensurateur levier-préhenseur," which he claims is capable of measuring the bilateral diameter of the child's head at the same time that it serves as a lever to aid in its descent, and there are numerous pelvimeters for internal measurement that are claimed to be accurate. I believe none of these instruments, however, have proved of much practical value. Farabœuf's instrument cannot be applied when the head will not engage, and internal pelvimeters are little more accurate than the operator's finger. Indeed, I think our most accurate knowledge is to be gained by careful examination of the contour of the pelvis by the finger in the vagina, and by careful measurements made in the same way. The fact that internal pelvimeters are made shows that the estimated diameters from external measurements are not accurate, and the fact that external measurements are still relied upon is pretty strong evidence that the

internal instruments are not practical. I consider accurate pelvimetry a very difficult and sometimes impossible undertaking. A glance at the accompanying diagrams will better illustrate my meaning.

In Case 1 bony projections crossed the median line, fitting into corresponding depressions on the opposite side. These projections were cut through with very considerable force. There was a very thin layer of cartilage. As shown in the antero-posterior section, the bone was projected downward and



FIG. 1.

FIG. 1 represents diagrammatically the normal symphysis in transverse and anterior-posterior sections, and as I found it in my second and fourth cases.

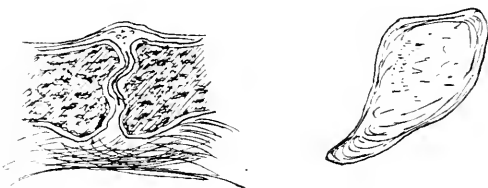


FIG. 2.



FIG. 3.

FIG. 2 shows the symphysis as I found it in my first case, and FIG. 3 as I found it in my third case.

backward to an unusual degree, causing a much greater narrowing of the inferior strait than would appear from any outside measurements.

In Case 3 there was a sort of double arch, the lower arm projecting downward and backward in the same way. The interarticular cartilage extended only about half-way through the symphysis. But the whole bone, as far as exposed on either side of the median line, was soft. It seemed to be a mixture of fibrocartilage and transverse filaments of bone, and

was cut through without great difficulty. I believe that similar abnormalities are not very uncommon in deformed pelves.

While I question the accuracy of pelvimetry, I do not consider it useless. I think it should be practised with great care and that much valuable information may thereby be gained. I would not, however, depend upon pelvimetry to the exclusion of digital examination and knowledge to be gained by a careful use of forceps.

When, by a thorough but careful trial, the head cannot be made to engage by the use of forceps, there may be still a chance for delivery by version, but a very remote chance of delivering a living child. But with the head held against the brim of the pelvis, the finger may be swept around its circumference and a better idea gained of its relative size in comparison to the pelvis than can be obtained in any other way; and if there is a marked disproportion and the head cannot be brought down into the pelvis, enough to partly engage, then version had better not be tried. This trial by forceps will prevent unnecessary operations, and will also give warning of such disproportion between the head and the pelvic diameters as would prevent delivery even by symphyseotomy. If the head be much too large or the pelvis much too small, as a rule the forceps cannot be properly applied. While the actual range in pelvic diameters suitable for symphyseotomy is very limited, yet many cases come within that narrow limit, and it will usually be possible to determine with a fair degree of accuracy what cases are suitable for the operation if all these methods of examination be employed. Should the symphysis be divided and it be then found impossible to deliver without a greater separation than two and a half or at most two and three-quarter inches, the operation should be abandoned and Cesarean section or craniotomy substituted. Many of the deaths and bad results I believe have come from persisting and using too great force and too great separation of the bones under such circumstances.

The fourth danger is that of lacerating the bladder or urethra or the sacro-iliac ligaments and periarticular tissues. If ordinary surgical care be observed this danger will only apply to unsuitable cases. By avoiding more than two and a half inches separation under all circumstances, there will be no laceration of tissue except a peeling-up of the periosteum for about an inch and a half in front of the synchondroses, unless it be in extremely rare cases in which inflammatory thickening

of the prevesical tissue is present. Should such thickening be found the operation should be abandoned before the joint is severed.

A fifth danger is that of hemorrhage due to rupture of anterior vesical veins or the veins of the clitoris. These veins are large and numerous, as may be seen from the accompanying diagram (Fig. 4). When ruptured they bleed profusely, and this hemorrhage may be serious or even fatal to enfeebled patients. Usually it may be checked by gauze packing, and will cease when the wound is closed. It may, however, be entirely obviated by separating the tissues carefully all around the symphysis, and for three-quarters of an inch to one inch on each side of the median line, before severing the joint. After free-

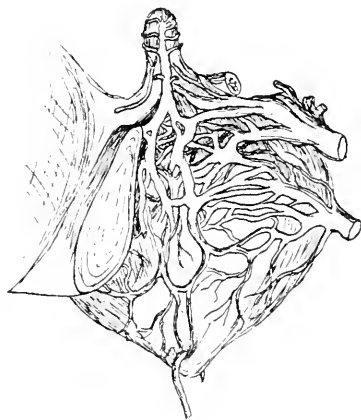


FIG. 4.

ing the bones in this way with a blunt dissector and the finger, so that two or three fingers may be passed all around the joint, a grooved director of special shape, or, what I prefer, a long, narrow gauze sponge, may be placed behind the joint so as to protect the tissues behind and below, and the joint opened.

A sixth danger—that of sepsis—has been of frequent occurrence and often of serious character. Wounds involving bones and joints are more easily infected, or offer less resistance to infection, than those of any other part of the body. The general surgeon knows that with the same care and precaution he is much more apt to have infection in bone and joint operations than in abdominal or vaginal work. Gynecologists and obstetricians do not seem generally to have recognized this fact.

The vulva and vagina may be disinfected sufficiently to give uniformly good results in operations upon the neighboring soft parts, but it is almost or quite impossible to render these parts so aseptic as not to be a serious menace to a joint wound in their close proximity. It therefore becomes a matter of great importance to make the wound in symphyseotomy as far above the vulva as possible, and it will be found that it is not necessary in the majority of cases to extend the skin incision further down than the upper edge of the symphysis, or about two inches above the urinary meatus. The skin may then be pulled down by a retractor in the lower angle of the wound and the joint exposed, while the vulva is kept covered with a sterile towel or gauze. For the above reason I would strongly oppose the subcutaneous method proposed and used by Ayers. If any subcutaneous method is to be used the knife should be entered through the skin above the symphysis; but there is always danger, in such operations, of severe laceration and hemorrhage, because it is impossible to free the bones posteriorly. Even if no serious laceration occurs, a more or less extensive blood clot is almost sure to be formed in the yielding pre-vesical tissues which will favor infection. Lusk¹ says of the subcutaneous operation: "Theoretically the advantage of preserving the integument intact does not seem to justify the sacrifice of the steps by means of which hemorrhage is surely guarded against and the bladder and retrosymphyseal space are protected." By strict aseptic precautions, by avoiding subcutaneous operations, and by practising this high incision I believe the risk of sepsis may be very materially lessened.

In addition to the usual aseptic precautions I would recommend the free use of a 1 : 2000 bichloride solution in and around the wound and on the operator's hands before and during the operation, packing and covering the wound with gauze wrung out of this solution, while delivering the child, and a final ample dressing of moist bichloride gauze. The child should be delivered by an assistant while the operator watches the protection of the wound and the separation of the bones. If the child is delivered by the operator he should carefully disinfect his hands again before closing the wound.

I may be criticised for my free use of bichloride solution, but I have used it freely for ten years, and in several thousand wounds of all sizes and shapes, and have dressed all my wounds for ten years with wet bichloride gauze, and have never seen

¹ Dennis' "System of Surgery," vol. iv., p. 806.

any bad results from it, except in one appendical abscess in which a considerable quantity was left in the cavity daily after irrigation. After several days a mild but unmistakable salivation occurred, which soon subsided when the bichloride was discontinued.

Seventh, a series of dangers and discomforts may arise from imperfect methods of coaptating the bones. Again I quote Lusk, who says: "Doubtless the weak side of symphyseotomy is the imperfection of all the methods thus far devised to secure coaptation of the parted surfaces after the operation. Ordinary bandages and binders become quickly soiled and require frequent changes. Metallic contrivances to exercise pressure on the hips, and plaster of Paris bandages, chafe the skin and lead to the formation of bed-sores. To a less extent the same is true of rubber plaster strips which encircle the pelvis. For these and similar reasons especial stress must be placed upon direct suturing of the symphysis either by silver wire passed through the bones by means of drills adapted to the purpose, or by strong silk sutures made to traverse the fibrous structures which overlie the cartilage and anterior borders of the pubic bones. The latter plan is advocated by Farabœuf, by Pinaud and his colleagues at the Baudelocque Hospital, and by Caruso in Italy."

"A certain degree of diastasis following symphyseotomy is by no means rare. It is, however, for the most part temporary, ending, after weeks or even months, in solid union. A slight degree of mobility does not prevent ordinary exercise in the erect position. An extensive separation may be the source of great discomfort. In one instance which came under my notice, where recovery ultimately took place, the patient's sufferings were for a time extreme, and led her frequently to beg me, when making my hospital visits, to put an end to her existence." I make this quotation to illustrate the discomforts and suffering which frequently follow the operation, and which, I believe, have proved so far to be the greatest of all objections to the operation, and which may be entirely obviated by wiring the bones. In my second case the bones were not wired, and the sufferings of the patient were very great for six or seven weeks.

Operators have paid great attention to the mortality statistics, but have had little to say of the discomforts and sufferings of the patients, which have been of frequent occurrence and of long duration. These sufferings, however, often make a more

unfavorable impression upon the general practitioner and upon the patient's friends and family than would even her death, and do more to bring the operation into discredit than would a higher mortality.

It is as much our province to relieve suffering as to save life. How often under other circumstances are more or less dangerous operations performed solely for the purpose of relieving pain or discomfort, and justifiably performed for this purpose alone! Looked at from this point of view, would it not be justifiable to wire the bones in symphyseotomy and thereby do away with its most objectionable feature, even if something were thereby added to the risk? But the statement that silver wiring has been the cause of sepsis and necrosis is simply absurd. It has originated from men who have had infection from careless surgery or unavoidable causes, and who have tried to lay the blame on the wiring. Men who have confined their work to obstetrical and gynecological surgery where they have not been obliged to use the strictest precautions, and who have failed to learn from the general surgeon, have been suddenly confronted by a bone and joint operation requiring a stricter application of the rules of asepsis than they have been accustomed to employ. And with that operation in the immediate neighborhood of the vulva and vagina, which it is impossible to make aseptic, or sufficiently aseptic not to infect a bone wound, is it surprising that sepsis was of frequent occurrence? Until the obstetrical surgeon learns this lesson from the general surgeon, he will continue to have frequent cases of infection in his symphyseotomies. The general surgeon can wire bones and joints without necrosis or suppuration following. No part of the body is more susceptible to infection than the knee joint, and yet the wiring of the patella is one of the most successful and brilliant operations of modern surgery, and infection is extremely rare in the hands of careful surgeons. I have wired the patella a dozen times without the slightest bad effect in any case. I have wired nearly every important bone in the body, including the skull and vertebræ, some of them a number of times, with but one case of infection; and in that case I would consider myself silly to attribute the infection to the placing of the silver suture. Silver wire through the bones is far preferable to silk passed through the fibrous tissue in front of the joint. Silk is certainly more apt to cause infection than silver, and the sutures through the fibrous tissue do not hold: they cut through in a few days at

most. They usually tear loose with the first movement the patient makes. They are not only useless, they are worse than useless, for they take valuable time to place, they are a source of irritation, and they do no good at all in holding the bones. The strain in these cases is tremendous. No apparatus will hold the bones together perfectly when a bed-pan is being slipped under the patient. No strap of any kind will do it. It is only necessary to place the finger in the vagina and have the patient make some slight movement to demonstrate this fact. There is no wide separation, but the bones are continually gaping for a quarter of an inch and then knocking together again. This will occur no matter how tight the strap, short of producing strangulation and necrosis. In addition, no strap can be kept tight; there is a constant shrinking of the circumference of the pelvis, and slipping up or down on any strap that may be applied. It may be provided with buckles and tightened every day or several times a day; but this will not prevent slight separation and knocking together of the ends of the bones, which is a real source of danger. The soft tissues are sure to be more or less pinched between the ends of the bones. In my second case the urethra was bruised in this way and sloughed. No suture that does not pass through the bones themselves will hold them in perfect apposition. Theoretically silver wiring will hold the bones in perfect apposition and prevent bruising or pinching of the soft tissues. It will lessen the chance of infection and necrosis by preventing the bruising and pinching, and because it is in itself antiseptic and is the easiest suture of all to sterilize. The practical results in my last two cases have borne out this theory.

Two cases are not much to base an opinion upon, but they show that wiring the bones does not *necessarily* produce any bad result. The contrast between the convalescence in my wired and unwired cases has been most marked, and in conclusion I venture to predict that symphyseotomy will never meet with general favor until the uniting of the bones by wiring shall become the general practice.

1418 L STREET, N. W.

AN INDICATION FOR SYMPHYSEOTOMY:

WITH REPORT OF A CASE.¹

BY

HENRY D. FRY, M.D.,

Washington, D. C.

THERE are several interesting subjects I have at different times thought I would bring before this Society for discussion, but on the present occasion I set them aside in order to present a short paper on the above question. I do so because this will furnish a fitting sequel to my two preceding papers. The first of these was entitled "Manual Rectification of Faulty Head Positions." In that paper I called your attention to the fact that the physicians of the present generation pay less attention to the mechanism of labor than the practitioners of a previous era. They are less skilled in making the diagnosis of the head positions and in following the different movements of the head diameters in their adaptation to those of the pelvis.

This degeneration I attributed to a growing confidence in, and more universal application of, the obstetric forceps. Tardy labor, from whatever cause, could be and was to a large extent remedied by instrumental delivery. The instrument was resorted to in appropriate and inappropriate cases, and the result was generally the delivery of the child. It was considered a successful application because the labor had been terminated, but no consideration was paid to the unnecessary force that had been employed, to the death of the child from the misapplication of the blades to the head, or to the extensive laceration of the mother's soft parts. This growing confidence in the use of the forceps, and the consequent abuse in its application, has done much to retard the scientific advancement of the obstetric art.

On the other hand, I called attention to the precision with which the older accoucheurs studied the position of the child's head during labor. Faulty positions of the head were recognized and corrected by promoting flexion, rotation, or extension, as the case may have demanded.

¹ Read before the Washington Obstetrical and Gynecological Society, February 2, 1900.

In my second paper I considered the treatment of unrotated occipito-posterior positions. It was and still is my belief that the failure of these cases to rotate anteriorly is the greatest cause of trouble. In many the position is unrecognized from neglect to make the examination with necessary care. Slow and ineffectual labor pains usually accompany this complication, the first stage of labor is prolonged, and the woman is exhausted when the time arrives for her to bring the auxiliary muscles into action. The remedy here is not the forceps; at least, not until the occiput has been rotated manually. I mentioned in this second paper the gratification I had derived from the practice of correcting these head positions manually, and I will add now that my further experience bears out the same line of treatment. But the class of cases with which my second paper dealt was that of persistent occipito-posterior positions. Here all effort to correct the malposition had failed. What was best to do? A careful trial of the forceps was permissible, and the blades should be applied as nearly as possible in the opposite oblique diameter of the pelvis to that occupied by the long diameter of the head. I have found the Breus forceps one of the best to be employed in these cases. If the head does not respond to moderate traction, it is doubtful if the use of the instrument should be persevered in. My next step in appropriate cases was to push up the presenting part under ether narcosis, perform podalic version, and deliver feet first. I had no cause to regret this method of overcoming the difficulty until I saw a patient die from shock soon after delivery. The next alternative that came to my mind was the advisability of performing symphyseotomy, and the object of the present paper is to urge its claims upon your attention. At that time I recommended its employment, and I now repeat it more emphatically because I have recently had an opportunity to recognize with what ease and simplicity the operation can be performed according to the Ayers method. In strong contrast with it was my former experience with the operation according to the method of cutting down in front of the joint and using a Galbiati knife to sever the articulation.

The symphyseotomy which is here reported was not performed for the complication under consideration, but the technique would be similar under both conditions, and it is the simplicity of that which emphasizes its value in either. The report of the case is as follows:

November 17, 1899. I was called to Columbia Hospital to see

Annie M., colored, age 19 years. The history was that she had been admitted in labor, which began November 13. The pains had been feeble until the 15th, when, after spontaneous rupture of the bag of waters, they became more severe. The head remained high and dilatation of the os was slow. The woman's pulse was then 130 and she showed signs of exhaustion from her prolonged labor. The pelvic external diameters were slightly below normal, but not sufficiently to indicate trouble. The head was engaged within the brim. The fetal heart sounds were indistinctly heard in the left lower quadrant. By digital examination the head, with a large caput succedaneum, was found in the upper part of the pelvic cavity. The occiput pointed to the left. Projecting from the body of the second sacral vertebra was a bony exostosis which diminished the antero-posterior diameter of the cavity to $2\frac{1}{2}$ inches.

After consultation with the staff it was decided to perform symphyseotomy. The patient was removed to the operating room and the operation performed at 2 P.M. The urethra was held to one side by a sound, and a probe-pointed bistoury was passed through a very small opening previously made at the lower border of the symphysis pubis. The forefinger of the left hand was inserted into the vagina and the palmar surface brought in contact with the posterior aspect of the articulation. The end of the finger felt the tip of the bistoury above the joint and served to guide the instrument between the articular surfaces of the bones and to protect the soft parts in front of the bladder. The joint was severed without difficulty, and the ends of the bones immediately separated sufficiently to pass the finger between them. The forceps was applied and axis-traction rods employed. The separation of the ends of the severed pubic joint increased and the head came down promptly to the outlet. The delivery was completed without further trouble. Very little hemorrhage occurred during the operation or after delivery. A few catgut sutures were used to approximate the torn mucous membranes. The ends of the pubic bones were pressed together and a broad strip of adhesive plaster placed tightly around the pelvis, and this was reinforced by a firm binder. A retention catheter was left in position. The patient made an uneventful recovery and was kept in bed three weeks. Examination before she left the hospital showed fibrous union of the joint. The weight borne alternately on each foot caused some movement of the joint, but

she felt no weakness at the part and walked about with a firm and natural gait.

The child was asphyxiated at birth, but respiration was excited by the usual external stimulation and the hypodermatic injection of strychnia, $\frac{1}{200}$ grain. The latter, unfortunately, caused spasmodic jerkings, and the baby died after several hours, evidently from the effects of the drug. Several years ago I presented a paper to this Society on the treatment of asphyxia neonatorum and recommended the hypodermatic injection of strychnia. It has been employed in a large number of cases (probably about fifty) in my private and hospital work, and with good result except in one other case. That was a feeble baby delivered prematurely by version in a case of placenta previa. In this instance death was evidently due to the toxic effect of the strychnia, given in overdose by mistake of the nurse. One-two-hundredth of a grain is not dangerous in a well-developed, full-term child, but I have learned to use caution in its administration.

The maternal mortality of symphyseotomy in the District of Columbia has been *nil*, but the experience with it is limited to six operations which have been done by three different operators and members of this Society. The method here described is so easily and quickly performed that it removes all the dread of a serious operation, and I would strongly urge its more general adoption. In cases of persistent unrotated occipito-posterior positions of the head I believe it is indicated in preference to forcible extraction with forceps or to version.

COMPLETE LACERATION OF THE PERINEUM IN YOUNG GIRLS.¹

BY

J. WESLEY BOVÉE, M.D.,
Washington, D. C.

As an explanation of the title of this paper, I will state the age is mentioned to suggest that injuries of the perineum and recto-vaginal septum from infinitely the most prolific cause—parturition—are excluded, as are such as occur from vaginal

¹ Read before the Washington Obstetrical and Gynecological Society, April 6, 1900.

operations for removal of neoplasms and other purposes. It is intended to treat only of accidental traumatic complete laceration of the perineum in the young girl.

When we consider the rarity of complete laceration of the adult perineum and recto-vaginal septum from non-puerperal causes, we will readily notice how rare it must be in children from any and all causes.

The changes in the perineum and recto-vaginal septum in the girl changing to womanhood are so slight they need no consideration here. It is sufficient for the purpose to ignore such changes except as to amount of tissue, as will be mentioned again. Had the child the same perineal structures in detail as has the adult, the result would be the same.

The unique manners of production of this injury are set forth by a few writers, and are about as follows: According to Hegar and Kaltenbach¹ rupture of the perineum and recto-vaginal septum results, in rare cases, from a fall on sharp or penetrating objects, such as a balustrade, the back of a chair, the prong of a pitchfork. etc. And such lesions sometimes present a peculiar clinical appearance from the fact that they affect the genitalia of children and virgins. Zweifel says: "It usually results from blows of the external genital organs against hard, sharp objects."

Hildebrandt speaks of a rupture of the perineum from a fall on the leg of a stool, with such force, indeed, as to break the object; and of the case of a little girl who in sliding down the balusters, on the nates, ruptured the perineum against the newel post. Zweifel had a case in his ward who deeply lacerated the perineum and the recto-vaginal wall as the result of a fall against a vine prop. T. G. Richardson² reports the case of a girl 5 years of age, brought to him in New Orleans from Texas, who had fallen on the sharply-cut stump of a sapling one year before. Severe hemorrhage occurred and was arrested by the application of cold cloths. She had slowly recovered her health to a certain degree. He found the rectum and vagina laid open one inch, and operated for its closure three times, at intervals of two and three weeks, but utterly failed to close the wound, and she returned to her home unimproved. Bixby³ reports a case of great interest in this connection, though not of complete perineal laceration. It was in

¹ American edition, ii., p. 312.

² New Orleans Med. and Surg. Journal, 1861, vol. xviii., pp. 222-224.

³ Journal Gynecological Society, Boston, 1869, vol. i., pp. 132-135.

the person of a child 5 years of age that was impaled through the left labio-perineal fossa in the following manner: She drew to the window her high chair, from which the back had been broken, leaving the rounds still standing and the upper extremities entirely free. She was standing in it and fell, a round puncturing a little laterally and anterior to the fourchette. The hemorrhage was severe and required plugging of the wound with a cotton plug saturated with persulphate of iron. No operation was done, as the services of the physician were dispensed with for pecuniary reasons, the wound suppurated, and the patient recovered after a very severe illness. Dr. Sargent, in discussing Bixby's paper, mentioned a case in which a rake handle entered the perineum to so great a distance that it must have penetrated the diaphragm and traversed to the upper part of the thorax, as it fractured the left upper rib. A year later she was in perfect health. Dr. Stimpson mentioned the case of a child impaled on a hay fork, and, though feeling bad a few days, went to school several days afterward. Fatal diarrhea soon supervened. An autopsy revealed a perforation in the bladder at the fundus and another through the subjacent peritoneum in front of it, so that portions of the peritoneum had become invaginated. Injury to the intestine, with inflammation and subsequent adhesions, had occurred, and at one point there was a communication between the bowel and bladder by means of a fistula. A hollow vesical calculus was found. Zodack, in the same discussion, mentioned a case in which impalement on a hay hook had occurred, the point projecting. It was sawed off, the staff withdrawn, and recovery rapidly followed. The cases reported by W. Curran¹ and M. Rey² are also interesting as illustrating the varieties of ways by which this condition may be produced. Curran's case was as follows:

"An Irish girl, 20 years of age, wearing no underclothing, as is usual with this class of servants, was carrying a bundle of clothing which prevented her seeing well the way before her. She had to pass over a stile. A goat on the opposite side saw her as her clothes were disarranged incident to her crossing over the stile, and hooked his horn in the anus, bringing it out the vagina. As she flinched it tore out the perineum. She fainted from shock and hemorrhage, and was carried unconscious to her bed. A physician was not called until three days

¹ Medical Press and Circular, London, 1872, n. s., vol. xiv., p. 126.

² Gaz. d'Hôp., Paris, 1833, vol. vii., p. 435.

had elapsed, but he carefully renewed the edges of the wound and closed it. The union was fairly good, but a fistula was left which later closed by applications of nitrate of silver."

Rey's case was in a girl, 19 years of age, who mounted a haycock eight to ten feet in height in which was stuck a hay knife with a handle three or four feet in length and directed toward the ground. She slid down, and the point of the knife passed between the lips of the vulva, up the vagina, and entered the peritoneal cavity. She did not faint, but endeavored to withdraw the instrument. Friends gathered about her and endeavored to remove it, but without avail. Then the physician and midwife failed, though the handle projected between the thighs. An expert surgeon was summoned from a distance. He found a hard, isolated body projecting into the hypogastrium to the left of the median line near the pubes. It occupied so much of the vagina that a finger could not be introduced at the side of the handle of the instrument. To render the patient better able to be removed to her home, the surgeon was about to saw off the handle close to the vulva when the arrival of a priest compelled him to desist. The patient, apparently dying, was carried to bed and a hot iron used to char the handle of the implement quite close to the body for the purpose of facilitating removal of it by breaking away the handle. Nothing was gained by the procedure. The angle of the knife rested heavily on the sacrum, and it was therefore difficult to dislodge or to impart any motion to it. Finally, by manipulation, which was rendered more difficult by the absence of the handle, the angle came forward and dropped down enough to free it. It was thus loosened and removed. No hemorrhage or discharge from bowel or bladder followed. She had a slight attack of peritonitis, but ultimately recovered.

A number of other cases of similar accidents occurring in older women are reported. Beckett¹ reports the case of a woman of 45 years who was getting water from a hogshead, fell, and in some way was impaled on the staves, severely lacerating the perineum, from which she recovered. Freer,² Bryon,³ and Espagne⁴ report like accidents to older women, some of them nearly 60 years of age. Broken crockery, such

¹ Transactions Medical Society, County of Albany, 1851-70, 1872, ii., p. 155.

² Proceedings Medical Society London, 1875-1877, iii., pp. 33-35.

³ Rec. de Mem. de Méd. mil., Paris, 1869, xxii, pp. 210-215.

⁴ Gaz. hebdomadaire de Sci. de Méd. de Montpellier, 1883, v., p. 469.

as a broken chamber vessel or slop jar, as well as kicks and falls, often produce injuries to the perineum. In Curran's case the hook of a goat produced the same effect. Rey's case is remarkable as an illustration of the difficulty sometimes encountered in the removal of the inflicting agent, and of the prompt recovery of these frightful cases of traumatism of even the peritoneal cavity. Howe¹ reports a case in a married woman who, in sliding off a load of hay, was impaled twenty-two inches on the handle of a hay fork, which penetrated the vagina and peritoneal cavity; she recovered. Begout (vide Howe) had a case of a slave who fell ten feet on to a tobacco stick, one end of which was fastened in the ground. The other end passed up the vagina and lodged against the eleventh and twelfth ribs on the right side. Very strong force was required to withdraw it. Peritonitis supervened, but recovery was perfect.

These cases mentioned are very instructive and interesting, but, as the "Wizard of the Nile" would say, they are not like mine. My case marked an historical advance, inasmuch as the injury was produced by a bicycle, and, too, a successful operation was done for repairing the injury. The history of the case is as follows:

Maud Scott, colored, age 8 years, was riding on a bicycle with a playmate, October 2, 1899. She was standing on the coasters, and, losing her hat, turned to secure it. In doing so her feet slipped off the coasters and she fell about a foot, lodging on the lamp bracket, made of a loop of wire three-sixteenths of an inch in diameter. The loop was rectangular in shape, with the upper corners slightly rounded, and was one and one-eighth inches wide. Its length was about two and one-half inches, and its degree of inclination from the bicycle frame was about fifteen degrees. The bracket caught in the rectum or vagina and held her suspended until she was extricated. She was attended by some physicians in the neighborhood, and on the 6th entered my service at Providence Hospital. Upon examination I found a complete laceration of the perineum, the tear extending up the recto-vaginal septum for more than an inch. Fecal matter was to be seen passing out the enlarged opening. There was considerable contusion and discoloration of the labia and adjacent parts. Hot boracic acid applications were applied until the operation was done, October 12, for repair of the injury. Under chloroform an examination

¹ Medical Review, Indianapolis, 1876, iv., pp. 129-131.

showed the tear up the recto-vaginal septum was about one inch, and along the vaginal wall the torn margin was half an inch longer. The rectal mucosa was first brought together with catgut (after careful denudation of the whole granulating surface), and then the vaginal mucous membrane was closed the same way. The anal sphincter was then sutured with catgut, and the remainder of the wound closed with three silkworm-gut sutures, so introduced as to completely close the remainder of the wound when tied. These were inserted in the shape of the figure 8. The bowels were moved daily, and the sutures removed on the tenth day. The union was complete, and she was discharged four days later.

In a hasty perusal of the literature in the Army Medical Library, but 2 cases (those of Richardson and Bixby) occurring before puberty were found. In but one of these was a surgical operation done, and this failed, even when twice repeated. So that, so far as I am informed, my case stands unique in being a complete laceration of the perineum extending high up the septum and successfully closed by a first operation.

In the treatment of these cases of complete laceration of the perineum and considerable of the recto-vaginal septum, the parts should be thoroughly cleansed, and, if necessary, a soothing antiseptic dressing applied. As shown by a number of the cases above cited, severe injuries of the abdominal viscera may require considerable delay before an operation for repair is attempted. Under nearly all conditions immediate closure of the wound is not to be advised.

Every writer on the subject mentions the remarkable amount of blood loss, and subsequent fainting and shock of the unfortunate patient is the rule. The moral shock to many of them is no doubt great, and we must combat all these conditions. Many times the wound will be jagged from the bluntness of the inflicting instrument. Then, too, the amount of bruising of the tissues may cause sloughing, rendering early operation disadvantageous. It is well to wait a few days in such conditions, and not to attempt a primary operation except in those having the smoothest wound surfaces, the least possible contusion, the slightest and cleanest wounds, and in the ruggedest patients. Inasmuch as the perineal and recto-vaginal structures are very slight in girls as young as the one I operated on, special care is necessary to secure accurate coaptation of the torn structures for a sufficient length of time to permit perfect

union. Then, too, these little sufferers are very timid after such severe injuries and the operation, rendering the after-care of them very difficult. This increases the importance of close coaptation of all the mucous and skin coverings to prevent infiltration of urine or rectal and vaginal discharges.

1404 H STREET.

COMPRESSION OF THE URETERS BY MYOMATA UTERI.¹

BY

J. H. MASON KNOX, JR., PH.D., M.D.,
The Johns Hopkins Hospital.
(Service of Dr. Kelly.)

AN analysis of the foregoing cases suggests the following summary of the important features:

AGE.—The compression of the ureter is an incidental complication in the growth of a myomatous uterus, and hence the time of life at which this complication takes place, though it may vary within wide limits, is usually about middle life, or that in which myomatous tumors in general develop. The average age of the patients in the cases cited is 40 years, the oldest being 70 years (Case 18), the youngest 25 years (Cases 8 and 19).

SIZE AND LOCATION OF THE MYOMATA.—It is difficult to compare accurately the tumors in the several cases in point of size, as measurements or weights were given in but few instances. Usually the dimensions of the growth must be estimated from the position it occupied in the pelvis or abdomen. In general, however, it may be stated that the tumors were of large size. For convenience the myomata may be divided, in respect to their size, into three groups.

(a) *Small tumors in the pelvis.*—Few, if any, of the cases properly belong under this head. The smallest tumor in the series, Case 25, is described as being as large as two fists. In several other instances the growth was apparently confined to the pelvis (Cases 9, 21, 13, 17, 25), but in each case it occupied all the available space.

(b) *Large tumors in both pelvis and abdomen.*—In this category belong nearly all the cases. Of the 25 cases cited, in 11—namely, Cases 1, 2, 3, 4, 5, 6, 8, 14, 17, 21, 23—a large part

¹ Continued from p. 364, September JOURNAL.

of the abdominal cavity was occupied by the mass. Probably the largest tumor recorded is that of Case 1, in which the growth nearly filled the abdominal cavity and weighed 24 pounds.

(c) *Large abdominal tumors*.—There is but a single instance in the series in which the constricting mass was entirely above the pelvis, namely, Case 20.

OUTLINE AND CONSISTENCE.—The tumors in the cases under consideration had the characteristics of myomata, both in respect to their consistence, which was firm and unyielding, and in their outline, which was irregularly globular, depending upon the size and situation of the various component nodules.

In one instance (Case 21), however, the mass was fluctuant, the whole uterus being converted into an immense cyst containing nineteen litres of fluid. In several (Cases 6 and 20) one or more of the nodular masses had become necrotic and softened; in another (Case 18) the tumor was calcified. No uniformity can be deduced as to the point of origin of the tumors in these cases. The whole uterus was involved in the constricting mass in about half these cases recorded. The posterior surface of the fundus was next after the seat of the primary growth, then the anterior surface and the cervix in the order named. The tumor arising from the posterior lateral surface of the uterus would, other things being equal, be more likely to reach and compress the ureters than a similar growth beginning in another situation; but as the symptoms of ureteral pressure have not, as a rule, occurred until the tumor had attained large size or some complication had set in, the determination of the portion of the uterus at which the growth begins is of less importance than to know the rapidity of its growth and the situation of the several component tumor masses.

POINT OF URETERAL PRESSURE. (a) *Pelvic Brim*.—Although the ureter may be compressed by a myomatous mass at any portion of its course, it seems particularly exposed to pressure by a large tumor at the pelvic brim. In but few of the cases cited was the exact point of pressure recorded, but in a large number the dilatation of the ureter seems to have taken place above the true pelvis. Several considerations lead one to expect that a pelvic abdominal tumor would exert its most marked pressure upon the ureter at the brim of the pelvis. That this point in the course of the ureters might be obstructed by a tumor of this nature is explained by two con-

siderations. In the first place, at this point the ureters lie almost directly upon a bony ledge and thus are unable to sink into the surrounding tissues, as they do to some extent in all other portions of their course when pressed upon by a firm tumor mass. Again, the form of the pelvis prevents the development of a uterine tumor of considerable size in this cavity without producing pressure effects upon the various organs. It is when, in the growth of the tumor, it becomes too large to be contained in the pelvis that it tends to overflow into the general abdominal cavity. The point of most resistance in its further enlargement is at the pelvic brim or superior strait, where a narrowing occurs. The process to some extent resembles a labor, with the direction of the moving mass exactly opposite.

(b) *Ureters lifted up by underlying tumors.*—In several instances (Cases 1, 3, 4) the pressure by the tumor was exerted upon the ureter in a postero-anterior direction, due to the situation of the myoma beneath the vesical terminals of the ureters. These, together with the neck of the bladder, were raised up above the pelvis and the ureters so stretched as to partly occlude their lumen.

(c) *Ureter adherent over a considerable surface of the tumor.*—Again, the outline of the tumor, either in the abdomen or pelvis, may conform to that of the ureter, and the latter become adherent and somewhat obstructed along a considerable portion of the growth (Cases 20, 21, 22).

(d) *Ureter surrounded by tumor.*—In 2 cases (7 and 9) the ureters were completely surrounded by the myomatous mass; in 1 case the ureter was buried for a distance of 9 centimetres (7) and in the other (9) for 7 centimetres. In both instances the pelvic portion of the ureter near the bladder was affected, and in neither was the occlusion extreme. This remarkable condition is due either to the development of a myoma in the ureteral wall or, what is more probable, to the fusion of several pedunculated masses arising in the uterus.

COMPLICATION.—The chief danger to the patient from the development of a benign pelvic tumor such as a myoma of the uterus is usually not due to the mass itself, but rather to some complication arising during its course.

(a) *Adhesion.*—Of those incidents secondary to the tumor, the pressure of adhesions binding it to the pelvic wall or to pelvic structures is perhaps as important as any. Adhesions are, of course, dependent upon some antecedent peritonitis,

often of slight grade, and vary in extent from fine filamentous threads, easily broken up, to coarse fibrous bands firmly locking the connected parts. Dangers of three kinds may be traced to the formation of adhesions in these cases.

1. They prevent the mobility of the tumor mass as it enlarges in the direction of the least resistance, and so bring on the effects of ureteral compression earlier than would be the case from the weight of the tumor.

2. Moreover, bands of adhesions uniting the myomatous uterus with neighboring organs—for example, the bladder, rectum, and lateral appendages—may lead to various serious conditions dependent upon the involvement of these structures, and completely mask the accompanying obstruction of the ureter. Adhesions were noted and played an important rôle in the development of many of the cases cited—*e.g.*, Cases 5, 7, 12, 14, 18, 19, 20, 21, 22, 24.

3. It is, however, in considering the advisability of operative interference that adhesions deserve most consideration. This factor, more than any other, often renders operations in the pelvis difficult. In several instances (Cases 18, 21) the tumor was so densely adherent that it was found impossible to remove it, and in another (Case 12) the “stump” of the growth had to be left adherent in the floor of the pelvis. Adhesions would make impossible the procedure adopted in Cases 10 and 11, that of pushing the myomatous mass by manual palpation from the pelvis to the abdominal cavity. The method of bisecting the myomatous growth preparatory to its removal was undertaken by Dr. Kelly because firm adhesions prevented the raising of the tumor out of the pelvis sufficiently to remove it in the usual manner.

(b) *Infection of the urinary tract.*—The infection of the urinary tract is perhaps the most serious result that may take place secondary to ureteral compression by a pelvic tumor. In Group *D* (c) (d) (e) have been gathered instances in which infection has been traced upward from the ureter constricted by a myomatous uterus. In cases of hydroureter from this cause the conditions are ripe, for upper ureter and kidney, distended by the urine, offer little resistance to the spread of the infection, and a most disastrous series of complications, illustrated by the cases in Group *D* (c) (d) and (e) respectively, results. The same lowered resistance renders the kidneys more susceptible to inflammatory conditions of hematogenous origin. Other complications are of less frequent occurrence.

(c) *Peritonitis*.—1. A chronic peritonitis resulting in the production of adhesions has already been considered. 2. Acute peritonitis of slight grade must have preceded the chronic form. In one instance (6) in opening the abdomen a purulent peritonitis was encountered, due to the necrosis of a myomatous nodule in the fundus.

(d) Other pelvic tumors may be present and complicate the situation. Thus in Case 19 a small ovarian cyst was densely adherent behind the myomatous uterus.

(e) *Congenital abnormalities*.—Abnormalities of any of the pelvic organs may be present. In Case 25 death was hastened and diagnosis obscured by the presence of an unsuspected bipartite bladder.

PATHOLOGY—The pathological alterations following ureteral compression have already been referred to and do not call for extended consideration. The partial obstruction to the outflow of urine is succeeded by a dilatation of the elastic tube above, producing the condition of hydroureter. Hydroureter is always accompanied by some dilatation of the renal pelvis. As the process of stretching continues, there is a gradual thinning of the ureteral walls with atrophy by pressure of the several layers composing them. In extreme cases the ureter may resemble the small intestine in size and gross appearance. The corresponding dilatation of the renal pelvis, involving at length the whole kidney substance except a thin film of the cortex, has been referred to. In these cases the retained fluid, at first urine, gradually loses by absorption its urea and other characteristic ingredients and takes on more and more a watery character. Similar alteration of the retained fluid takes place even after a partial obstruction, resulting in a low grade of hydroureter. The urine in the affected side, when examined separately, is found to have a lower specific gravity and a diminished percentage of solids than that of the other kidney or the mixed urine. In nearly all cases, in addition to the dilatation of the pelvis, the kidneys show, even after a moderate damming-back of the urine, some stage of nephritis. Usually, when the interference with the outflow of urine is not extreme and is of short duration, a slight parenchymatous nephritis (cloudy swelling) is found in section. This gives way in the later stages to the chronic interstitial nephritis (contracted kidneys), unless the obstruction becomes complete, when the hydronephrosis involves the whole organ, as above mentioned; or when the element of infection finds access

to the urinary tract, when a train of conditions follows to be at once discussed. Below the point of pressure the ureter, in slight grades of hydronephrosis, may be unaltered. When the obstruction is complete and the lower ureteral tract is functionless, it tends to atrophy. The lowered resistance of both kidney and ureter above the area of compression renders these structures usually an easy prey to infective agents. Toxic products may reach the urinary apparatus through the blood, or any latent infective process may become active, when the kidney is thus thrown partially out of function. Usually, however, the infection is primary below the point of ureteral pressure and travels upward along the ureter. The inflammation set up in the ureters—pyoureter—is usually attended by some dilatation of these tubes. The mucous membrane becomes thickened, infiltrated with the usual inflammatory products, which may extend through the ureter, giving rise, it may be, to a periureteritis with adhesions. In the cases we are considering there was no bacteriological analysis of the specific infective bacteria. Doubtless, however, the pyogenic cocci played an important part. Infection now travels upward, setting up a progressively extensive ureteritis, until in the majority of instances both ureters were affected, though rarely to the same extent. This occurred in the following cases: 1, 3, 5, 6, 10, 11, 12, 13, 14, 15, 16, 18, 19, 20, 21, 22, 25=17. In the following the right ureter was alone dilated or infected: 2, 4, 8, 9, 17, 23, 24=7; and in but one—namely, 7—was the left ureter alone the seat of the dilatation. The character of the ureteral and kidney involvement is easily deduced from the grouping of the cases or from the accompanying table.

SYMPTOMS—SIGNS.—The symptoms in the cases considered have rarely been suggestive of ureteral pressure. The patients have complained for the most part of a growing mass in the abdomen, giving rise to a severe weight and a bearing-down feeling. Irregular menstruation, profuse menstrual discharge, occasional uterine hemorrhage, and frequency of micturition were also common. The examination of the urine has proved an unreliable aid. For the cases of moderate pressure the urine has been frequently reported “negative.” Pus has been present in the urine in many of the cases. Persistent pyuria after repeated lavage of the bladder suggests an infection of the upper urinary tract, as in Case 23, but does not help one in detecting a ureteral obstruction. Albumin and casts have been noted several times and hematuria once. Other symp-

toms dependent upon the pressure effects of the tumor, such as a gastro-intestinal disturbance, loss of appetite, nausea and vomiting, and constipation, are not infrequently present. More suggestive symptoms are those indicative of interference with the outflow of urine. This may be of several grades:

(a) Moderate interference, as shown in Case 3, where there was "some difficulty in micturition."

(b) A further degree of retention is illustrated in Case 9. There micturition was accompanied by tenesmus, and large quantities of urine were passed after the application of a hot compress.

(c) Retention of marked grade was recorded in Cases 10 and 11, where but a few drops were voided after much straining.

(d) Retention of urine was followed by complete anuria in Cases 12 and 16, in the former for four days.

(e) Death from uremia occurred in three instances, the two just cited and in Case 22. These symptoms, of course, do not indicate that the ureter is the seat of an undue pressure, but it does point to a more or less pronounced obstruction to the passage of urine, and when this is associated with the pressure of a large abdominal tumor the possibility of ureteral compression by the mass should be carefully considered. In two instances, Cases 14 and 17, post-operative anuria ensued, probably from nervous shock to the kidney after the ureteral pressure had been relieved.

DIAGNOSIS.—As may be concluded from a consideration of the symptomatology, the diagnosis of ureteral compression produced by a myomatous uterus may be difficult. As already mentioned, when the interference is of moderate grade the ureteral involvement has usually been overlooked. Nevertheless this complication in the growth of a myoma may lead to dangerous results, and its early recognition is of importance. The following steps may lead to the diagnosis of ureteral pressure:

The size and outlines of the tumor must be determined by vaginal or rectal touch as accurately as possible, as well as the portion of the pelvis against which it abuts. By palpation also an attempt must be made to follow the ureters from the bladder upward and laterally, and the possibility of its compression by the given tumor estimated. Especial attention should be paid to the mobility of the tumor, as it has been shown that firm adhesions fixing the myoma in the pelvis increase the chance of ureteral involvement. Complicating in-

flammation, especially of the tubes and ovaries, must be carefully considered, as they may displace or render immovable the ureters, thus rendering them liable to early compression. After having determined to some extent the relationship of the tumor to the ureters, the actual condition of these tubes must be examined directly. This is done by means of catheterization of the ureters through the cystoscope. By this method urine can be collected from each ureter and kidney separately and the condition of these parts determined. Of particular interest is the diagnosis of a hydroureter, pathognomonic of obstruction in the ureter when the bladder and urethra are shown to be normal. This is made by noticing the sudden gush of fluid through the catheter when it passes the point of compression, and by a comparison of the urine from the two ureters with each other and with a normal specimen. In cases of hydroureter the rate of flow is much increased; if but one side is affected the difference in the outflow of urine from the two catheters is striking.¹ The specific gravity of the urine is lowered and the output of urea is decreased in hydroureter. For example, if in a woman suffering from a myomatous uterus there is reason to suspect ureteral compression, the passage of a ureteral catheter would determine the following points:

(a) From the distance measured in the catheter from the ureteral orifice to the point at which the catheter becomes blocked or hindered, the exact situation of the pressure, if any, can be estimated.

(b) A wax tip in the end of the catheter would disclose the presence of a calculus.

(c) The rate of flow of the urine from either ureter suggests the presence, if rapid, or absence, if normal, of a dilatation of the upper urinary tract.

(d) The results of the examination of the urine indicate the condition of the kidney and ureter.

(e) The shape of the catheter after removal from the ureter and if quickly withdrawn, assumes that acquired in the body, and so may help in ascertaining the contour of the tumor and its relationship to the ureter.

(f) Palpation of the ureter per vaginam and rectum is much more accurate after the introduction of the catheter.

The ureteral obstruction is suggested whenever there is retention of urine or complete anuria in association with an

¹ Kelly's "Operative Gynecology," vol. ii., p. 428.

empty bladder. Very rarely, usually after operation, the anuria is due to failure of the kidneys to function. When such retention of urine sets in, in a case where a myomatous uterus is known to be present, the diagnosis of a hydro- or pyoureter following pressure from the tumor mass upon the ureters is warranted. The distension of the upper urinary tract is often intermittent, as the accumulated pressure overcomes the force of the constriction below. The stretching of the renal pelvis gives rise to a severe pain in the side in the region of the kidney and ureter, of considerable aid in making a diagnosis. In a moderate degree of dilatation the kidney may often be palpated, and in extreme grades a fluctuating tumor of varying extent can be made out in the lumbar region (Case 24). This physical sign is almost pathognomonic of ureteral obstruction.

In doubtful cases, when the condition of the patient warrants operative interference, an exploratory celiotomy should be performed and the exact relationship of the ureters thoroughly investigated. In consideration of the fact that in the past most of the cases of moderate ureteral pressure by myomatous masses have been overlooked and that in many instances disastrous results have followed therefrom, the inspection and palpation of the ureter should be a routine procedure, if there is no contraindication, whenever the abdomen is opened.

PROGNOSIS.—The prognosis in these cases is most uncertain. A moderate grade of ureteral compression is compatible with fair health. The condition becomes dangerous only when the pressure of the tumor becomes extreme or when one of the various complications above mentioned sets in. Most to be feared is that the upper urinary tract in its lowered state of resistance may become the seat of an infection. Fortunately, this usually does not attack both sides with equal severity, and the comparatively sound kidney may do double duty for years.

TREATMENT.—The compression of the ureter by a myomatous uterus is but one of the complications that may arise in the development of such a tumor, and the treatment of the ureteral condition may be included in that of the tumor itself.

In general, three lines of treatment suggest themselves: (a) expectant, (b) palliative, (c) radical.

(a) *Expectant.*—As has been already repeatedly emphasized, in a large proportion of the cases of ureteral pressure by myomatous masses the degree of compression is so slight that no

symptoms are produced, and the condition is discovered when the abdomen is opened at operation or autopsy. This being the case, when a myomatous uterus is causing no inconvenience to the patient the expectant treatment should be adopted, while the possibility of a slight grade of hydroureter from pressure should be borne in mind and the patient kept under occasional observation. If there is reason to suspect an involvement of the ureters, the condition of these structures should be investigated by the catheter. Having determined that a definite interference with the outflow of urine exists, the treatment of the condition is either palliative or radical.

(b) *Palliative* treatment is permissible only when the ureteral compression is of slight grade and is not becoming worse, or when the condition of the patient is so alarming—*e.g.*, in Case 20—as not to tolerate a more radical method.

The application of warm cloths may, as in Case 9, hasten the outflow of urine in a moderate hydroureter. Temporary relief may likewise be obtained by ureteral catheterization. In general the *medical* treatment is one intended to support the strength of the patient, to promote the elimination of the urine, and to meet untoward symptoms as they arise. Under palliative treatment may be included the procedure adopted by Pepper and Hue in Cases 10 and 11. This consists in pushing up the constricting tumor from the pelvis into the abdominal cavity by pressure through vagina and rectum. This method was followed in both cases by relief from symptoms. It is applicable only when the myomatous mass is not adherent, and is not to be recommended when there are no contraindications to operative interference.

(c) *Radical Treatment*.—Radical treatment consists generally in the removal of the obstructing mass. This should be undertaken, if the general condition of the patient warrants it, whenever there is definite indication that the ureters are markedly compressed, not so much because of the present danger as on account of a probability of a subsequent infection. The extent of the operation required to remove the tumor—*e.g.*, whether a myomectomy, a hysteromyomectomy, or a panhysterectomy is indicated—is of course dependent upon the nature of the growth and need not be discussed here. The methods devised for the difficult, usually adherent cases have been various. Such cases present individual problems which must be solved by procedures thought to be most applicable to each. When the tumor is of large size, springs from the lower uterine segment and chokes the pelvis, and the ovarian

No.	Reporter of case.	Age.	Chief symptoms when reported	Treatment.	Size of tumor.	Point of origin.	Consistence.	Place of ureteral pressure.	Condition of ureter.	Condition of kidney.	Complications.	Result.
1	Kelly ..	50	Abdominal pain for six years, with growth incontinence of urine.	Hysteromyomectomy	Twenty four pounds. Nearly filled abdominal cavity.	Cervix ..	Hard	Probably at pelvic brim.	Double hydronephrosis.	Nephritis (slight).	Tumor densely adherent. Albuminuria	Well
2	"	53	Abdominal growth for four years. Menorrhagia.	"	As large as a 6 months pregnancy. Extends to 4 centimetres below ensiform.	Whole uterus.	Hard, irregular.	"	Right hydronephrosis.	Not affected.	Slow convalescence	"
3	"	41	Abdominal growth for twelve years. Uterine hemorrhages.	"	Extends to 4 centimetres below ensiform.	"	Firm, smooth.	Ureters raised at pelvic brim.	Double hydronephrosis.	"	None	"
4	"	43	Abdominal growth for three years. Difficulty in voiding. Menorrhagia.	"	Extends to umbilicus.	Anterior surface.	Firm	Bladder and ureters raised.	Right hydronephrosis.	"	Fundus in extreme retroposition.	"
5	"	22	Abdominal growth in right side of abdomen for three years. Frequent micturition. Profuse and painful menses.	Hysteromyomectomy. Left salpingo-oophorectomy.	Mass fills the pelvis and extends to the umbilicus.	Whole uterus.	"	Probably at brim.	Double hydronephrosis.	"	Dense adhesions. Tumor wedged in pelvis	"
6	"	35	Abdominal growth for four years. Shooting abdominal pain. Menorrhagia.	Hysteromyomectomy.	As large as 6 months pregnancy.	"	Firm, but necrotic in part.	Not stated ...	"	"	Purulent diffuse peritonitis from sloughing myomatia. Four sub-peritoneal myomatia.	Died on table.
7	Fabrigaus	43	Not stated	Panlysterectomy.	As large as an adult head.	Posterior surface of uterus.	Firm.	Left ureter buried in tumor for 3 centimetres.	Left hydronephrosis.	Not stated.	Adhesions	Not stated.
8	Kelly ..	25	Abdominal growth for several years.	Hysteromyomectomy. Utero-uterus anastomosis.	As large as a 6 months pregnancy at term.	Whole uterus.	Firm.	Not determined.	Right hydronephrosis.	Nephritis.	Division of ureter. Three large myomatous masses	Well ...
9	Ruhl ...	45	Backache. Abdominal pain. Pain on micturition. Polyuria.	Hysteromyomectomy. Dissection of ureter.	Tumor filled pelvis.	Anterior surface of uterus.	Firm, pedunculated.	Right ureter buried in tumor for 7 centimetres.	"	Right pyelonephritis.	Many adhesions ...	"

No.	Reporter of case.	Chief symptoms when reported.	Treatment.	Size of tumor.	Point of origin.	Consistence.	Place of uterine pressure.	Condition of ureter.	Condition of kidney.	Complications.	Result.
20	Kelly...	Abdominal growth for four years. Admitted in marked hebetude.	Medical.....	Tumor filled most of abdominal cavity.	Posterior surface of uterus.	Nodular, central necrosis.	Ureter adherent to posterior surface of uterus.	Double pyoureter.	Pyelonephrosis.	Displacement of viscera by tumor. Cardiac hypertrophy.	Death
21	"	Abdominal growth for five years. Dyspnea. Edema of the legs.	Incision of cyst of uterus. Ligation of ovarian and ovarian arteries.	Cyst contained 19 litres of yellow fluid.	Whole uterus.	Fluctuant.	General pressure upon ureter.	"	Double hydronephrosis. Atrophy and abscess formation in each kidney.	Adherent mass. Impossible to remove. Left ureter ligated.	"
22	Hanot...	" Uremic symptoms."	Medical.....	Tumor was 13 centimetres in diameter.	Posterior surface of uterus.	Firm, round.	Left ureter a canal on surface of tumor.	"	Pyonephrosis.	Bladder pressed to the right.	"
22	McCoy.	Abdominal growth for ten years. Menorrhagia. Appendicitis two years ago. Pyuria eighteen months ago.	Hysteromyectomy. One month later nephrectomy.	Tumor as large as a 6 months pregnancy.	Whole uterus.	Firm, nodular.	Right ureter at pelvic brim.	Right pyoureter.	Right kidney a large pus sac.	Appendix adherent to right ureter.	Well.
24	Pozzi...	Abdominal growth for eight years.	Hysteromyectomy. Nephrotomy.	Tumor as large as a man's head.	"	Firm.....	Not stated....	Right pyoureter, probably. Left hydronephrotic pyoureter.	Right kidney a pus sac.	Many adhesions...	"
25	Four-estie	Abdominal growth for years. Suddenly seized with violent chill and syncope. Later, incontinence of urine. Abdominal distension. Nausea.	Medical.....	Tumor as large as two fists.	Posterior surface of uterus.	"	"	"	"	Bipartite bladder. Upper division not reached with ordinary catheter.	Death.

and uterine vessels are spread over its surface so that they cannot be tied in mass, a radical departure from the usual method of performing hysteromyomectomy has been found of great value by Kelly¹ and others. It is briefly as follows:

After having thoroughly exposed the tumor, the vessels in the top of the growth are controlled by thrusting one of the open jaws of a long-jawed pedicle forceps through the capsule of the tumor on each side, at the level of the round ligament, from the anterior to the posterior surface of the broad ligament, and then clamping the forceps down on the uterine and ovarian vessels, entirely controlling the circulation. Then, grasping each uterine cornu with stout, short-toothed museau forceps and pulling in opposite directions, the uterus and tumor are bisected, after freeing and pushing down the vesical peritoneum. The halves of the tumor are then enucleated separately, leaving the surrounding tissues collapsed. The uterine artery is now easily reached and tied at a selected point below the body of the uterus, and the difficulties of the situation are removed and the case becomes a simple one. This method was successfully carried out in two cases of the series, 4 and 15.

The treatment of the complication consequent to pressure upon the ureter need only be referred to. When the tumor, because of the condition of the patient or other reason, cannot be removed and anuria ensues, either a nephrotomy with drainage is indicated or the ureters should be divided above the point of pressure and sutured to the abdominal wound. An infection of one kidney, which does not clear up after the ureteral pressure has been relieved, in spite of persistent lavage of the renal pelvis, is an indication for further surgical interference, provided the corresponding organ is little affected. Pyelonephrosis of marked grade should be treated either by incision and drainage or, better, when possible, by excision of the sac (Case 3).

CONCLUSIONS.—From the foregoing considerations it may be briefly concluded:

1. That some compression of the ureters is produced by a large proportion of all large myomatous uteri.
2. The resulting hydroureter and hydronephrosis may continue for years and give rise to no discomfort to the patient.
3. The presence of a dilatation of the ureter and renal pelvis, however slight, lowers the resistance of these organs to toxic and infectious agents, and hence inflammatory conditions of

¹ The Johns Hopkins Hospital Bulletin, 1900, xi., p. 56.

the ureter and kidneys not infrequently follow ureteral compression.

4. This being the case, in all instances of uterine myomata the possibility of ureteral involvement must be considered. When such a condition is suspected, every effort should be made by means of direct examination, by ureteral catheter, etc., to arrive at an accurate diagnosis.

5. Exploratory incision is occasionally justified to establish a diagnosis.

6. The ureters should be inspected whenever the abdomen is opened for the removal of a tumor.

7. A myomatous mass found to be existing under pressure upon one or both ureters should be removed, if possible, unless operative interference is contraindicated.

Such serious sequelæ of ureteral compression as extreme hydronephrosis, pyelonephrosis, etc., should receive appropriate treatment.

BIBLIOGRAPHY.

1. KELLY, H. A.: The Johns Hopkins Hospital Reports, ii. (1890), p. 168. Gyn. No. 3133.
2. KELLY, H. A.: Unpublished, Gyn. No. 2703.
3. KELLY, H. A.: Unpublished, Gyn. No. 2899.
4. KELLY, H. A.: Unpublished, Gyn. No. 7537.
5. KELLY, H. A.: Unpublished, Gyn. No. 7597.
6. KELLY, H. A.: Unpublished, Gyn. No. 5010.
7. FABRICIUS: Ueber Myoma u. Fibrom des Uterus, p. 43, cites case operated on by Chrobak.
8. KELLY, H. A.: The Johns Hopkins Hospital Bulletin, iv. (1893), p. 83.
9. RUHL: Centrbl. f. Gyn., xxii. (1898), p. 1056.
10. PEPPER, GEORGE: Pennsylvania Hospital Reports, . (1868), p. 361.
11. HUE: Annales de Gyn. iv. (1875), p. 249.
12. TUFFIER: Bull. et Memoir de la Soc. de Chir. de Paris, xix., 1893, p. 535.
13. ROCHET: Arch. de Tocol. et de Gyn., xxi., p. 143.
14. MILLIOT: Thèse, Paris, 1875, p. 45.
15. KELLY, H. A.: Unpublished, private practice.
16. MURPHY: London Journal of Medicine, No. 7 (1849), p. 981.
17. BERTHOD: Bull. de la Soc. Anatom., lix (1884), p. 189.
18. CABOT: Boston Med. and Surg. Jour., cxix., p. 517.
19. CABOT: Ibid.
20. KELLY, H. A.: Unpublished, Gyn. No. 77.
21. KELLY, H. A.: Unpublished, Gyn. No. 659.
22. HANOT: Soc. Anat. de Paris, 1873, Feb. 23.
23. MCCOY: Transactions of the Medical Society of New Jersey, 1898, p. 18.
24. POZZI: Annales de Gyn., xxii., p. 10.
25. FOURESTIE: Gaz. Méd. de Paris, xlv., 1875, p. 82.

HYSTERECTOMY.¹

BYWILLIAM F. METCALF, M.D.,
Detroit, Mich.

(With chart.)

THE subject assigned to me, "Hysterectomy for other Conditions than for Neoplasms and Malignancy," brings to our attention many unsettled questions. The glory of the surgeon is to save the life and function of organs. To decide upon the necessity for so radical a procedure as hysterectomy requires the most careful attention to all conditions relative to the case. Notwithstanding the exercise of the utmost care, operators of large experience must often remain in doubt as to the propriety of hysterectomy in certain cases. It is our duty, however, to conserve the general health even at the expense of special organs.

My statements are based upon sixty hysterectomies for varied inflammatory conditions. When the usefulness of an organ is destroyed by infection, it is a continuous menace to the safety of the individual.

In cases of diffuse pelvic suppuration—that is, where the infection invades the uterus, tubes and ovaries, and the peritoneal tissue—there is usually no large accumulation of pus, and any drainage which we may establish is imperfect. If we succeed in limiting the activity of the septic process by free incisions, there follows a condition of sclerosis, and the health of the woman is generally not restored. Vaginal hysterectomy is the safest and most satisfactory method of treatment.

Where, in gonorrheal pyosalpinx, it is found necessary to remove both uterine appendages, it is better to remove the uterus, for the following reasons: The gonococcus extends deep into the endometrium; the glands are infected; the membrane cannot, if it should, be all curetted away; there remains a vulnerable point for the entrance of streptococci and other

¹ Read before the Michigan State Medical Society meeting at Mackinac, July 11 and 12, 1900.

agents of infection, and there also remains the danger of communicating gonorrhea to others. Vaginal hysterectomy is a safer operation in the majority of these cases than laparotomy, and should be preferred, except in those cases where there is evidence of high adhesions such as form during pregnancy, or where, for suspected concurrent appendicitis or other intra-abdominal lesion, laparotomy is indicated. You must not infer that I advocate hysterectomy in all cases of gonorrheal pyosalpinx, only in those cases where the tubes and ovaries must be removed.

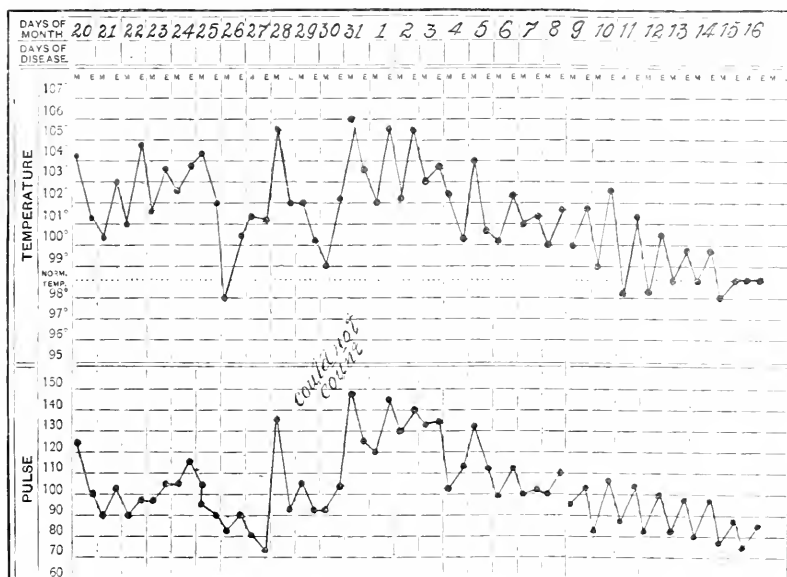
Establishing the menopause in young women should be avoided when possible, because of the resulting neuroses, unless there is a tendency to tuberculosis.

In cases of chronic metritis, which are so frequently found following abortions or following recovery from puerperal sepsis, in which the uterus is hypertrophied, or, observation being made later, it may be found atrophied, also in those cases in which continuous irritation is left at each cornu by the use of *en masse* ligature in removal of the uterine appendages, hysterectomy is the most satisfactory means of relief.

In cases of Cesarean section where we have reason to suspect that there may be sepsis or where the hemorrhage is profuse from the placental site, the uterus with its appendages should be removed.

I fear my position regarding the doing of hysterectomy in cases of puerperal sepsis has been misunderstood. Two general forms of puerperal sepsis are recognized. One due to retained secundines with sloughing at the placental site—a putrid infection in which the fetus is usually marked. In this class of cases Nature fortifies the system by building an infiltration zone beneath the infected area. The temperature may run high, but subsides when the uterine cavity is made surgically clean, just as it subsides after the opening of an abscess. We find a very different condition when the infection enters rapidly through the lymph channels. Suppuration may then occur in the broad ligament, in the ovary, or anywhere beneath the pelvic peritoneum. The peritonitis may become general or metastatic abscesses occur. The manifestations of infection—inflammatory deposits—are not generally found in evidence because of the rapidity of invasion. If by chance the resistance of the system be great and these barriers are built, isolating the infected area, the systemic symptoms may slowly subside, generally leaving the patient with permanently septic

pelvic organs imprisoned in organizing lymph. In this latter form, I think, as soon as the diagnosis can be made, which gives time for the application of the ordinary methods of treatment, exploratory incision through the cul-de-sac is proper, which incision will enable us to determine whether to trust to drainage or to hysterectomy. I believe this form of infection comparatively rare. Conditions found have compelled me to do the radical operation in but four cases. Three of the patients were *in extremis*. In these the uteri were found so boggy as to pit upon pressure, pustules presented beneath the peritoneum, and infection was evident in all parts of the uterine body.



Two of the four died about forty-eight hours subsequent to operation. In both autopsy showed metastatic abscesses in lungs, liver, and kidneys. I wish here to report briefly the two cases that recovered and who are now in apparently perfect health.

CASE I. I saw in consultation on August 23, 1898. She had been confined about ten days before. Fever had begun on the third day, preceded by chill. I cleaned the uterine cavity with a dull curette and solution of bichloride of mercury, disinfecting it thoroughly with a mixture of Churchill's iodine and carbolic acid, and used gauze drain. Ice-bag was applied to

pelvis, antistreptococcic serum injected three times at intervals of about fifteen hours, and easily assimilated food and stimulants were used. Five days later, August 28, her temperature was 105.8° and pulse 138. Opening was then made through the posterior cul-de-sac. I found no periuterine collection of pus. The uterus was soft and friable. After removal pus was found infiltrating all the tissue from its endometrium to its peritoneal surface. This operation was done per vaginam, as much as possible of the broad ligaments being removed. On the evening of the 29th her temperature was 99° and pulse 90. On the morning of the 31st her temperature rose to 106.2° and pulse could not be counted. She was again placed upon the table, and, being only semi-conscious, an anesthetic was not needed to explore the pelvis. An abscess containing about two ounces of brownish-gray fluid was discovered and drained. Ten days later her temperature was normal. Examination showed streptococci in abundance. The chart on page 513 was prepared by the nurse.

CASE II., age 30, was well until pregnant with fifth ch. d. In the eighth month became infected with gonorrhea. The eyes of the child were saved with difficulty. Case progressed as usual for two weeks, when temperature ran up suddenly to 103° , tympanites became marked, abdominal pain and tenderness great. After three or four days of rest in bed the above symptoms disappeared. She then sat up and the symptoms returned. This cycle of changing symptoms was repeated three times during the ensuing month. The uterus was then curetted and its cavity disinfected and drained. This gave no relief, but the unfavorable symptoms gradually increased, with severe pain in the region of the liver. In this condition she was sent to Harper Hospital. The tympanites and tenderness were so great that examination was unsatisfactory. Digital examination revealed tenderness at the vaginal vault and lessened mobility of the body of the uterus. I performed vaginal hysterectomy January 2, 1900, finding numerous small abscesses in both ovaries and in the broad ligaments. She left the hospital in ten days, was able to go shopping a week later, and has since apparently had perfect health.

H. J. Garrigues and others call attention to the dangers of hernia following vaginal hysterectomy. Cittadina, of Brussels, says that acute intestinal occlusion is a relatively frequent complication, and calls attention to the dangers of confounding it with ileus. I have met with this complication only

once, and that a hernia of the omentum which necessitated celiotomy. It may not be out of place, therefore, for me to briefly outline the method which I prefer in performing hysterectomy in inflammatory conditions.

In vaginal hysterectomy I incise the mucous membrane near the point of the cervix anteriorly and laterally, but higher posteriorly to afford more room. Dissection is carried upward until the uterine arteries are reached, upon each of which an artery forceps is placed and their connection with the uterus severed. The peritoneal cavity is then entered anteriorly and posteriorly, adhesions broken, and if possible the fundus uteri pulled downward through the anterior or posterior incision. Hemostatic forceps are now placed upon the ovarian arteries, and the uterus with its appendages is removed intact. If the uterus is large, after the dissection is completed around the cervix its removal is greatly facilitated by bisection of the organ (a method which I first described at the meeting of the Detroit Medical and Library Association, April 27, 1896), half of it being wrapped in gauze and pushed up into the cavity while the other half, with its appendage, is being removed. I then ligate the arteries and remove the forceps. If there now appears too profuse oozing from any part, I encircle it with a stitch of fine catgut. The ends of the broad ligaments and the peritoneal edges are now approximated, closing the cavity, there remaining no possible chance for hernia. Drainage is effected by a packing of gauze in a tent of China silk, which should with little discomfort be removed in twenty-four or thirty-six hours. If the organs are embedded in exudate, I first dissect out the uterus and then the tube and ovary upon either side, which occasionally must be torn in pieces from the inflammatory mass. In some cases the hemorrhage must be controlled by packing. Where there is free pus it may be unwise in certain instances to close the peritoneal cavity, when we must depend upon the packing of gauze to hold up the intestines and omentum. In abdominal hysterectomy I clamp the ovarian and uterine arteries and the artery of the sound ligament until the organs are removed, and then ligate them with sutures of catgut and approximate the edges of the severed peritoneum, if possible, draining from below.

A LARGE PELVIC EXTRAPERITONEAL HEMATOCELE
FOLLOWING DILATATION OF THE CERVIX
AND CURETTAGE.

BY

EUGENE R. CORSON, B.S., M.D.,
Savannah, Ga.

THE following case is of sufficient rarity and interest to warrant its publication. Mrs. W., æt. 18 years, married one year, was first taken sick on June 17 with a profuse menorrhagia which, though painless, weakened her so that she was compelled to go to bed. She could give no direct cause for it. Previous to this her periods had been regular from her thirteenth year. She had never miscarried, nor had she reason at any time to think herself pregnant. She was up and down from her bed until July 10, when pain set in—sharp pains across the lower part of her abdomen, and abdominal tenderness. Her case was diagnosed as one of inflammation of the uterus and ovaries, and she was blistered and purged, which relieved her for about one week.

On July 15 she came to Savannah and sent for Dr. E. H. Nichols, who, after treating her awhile, decided that she needed a curettage, and he kindly asked me to see the case with him.

I saw the patient first on August 3, and found a well-developed, rosy-faced woman who gave me an impression of health and vigor rather than one of weakness from pain and a long-continued drain. She had had no fever, only a moderate amount of pain; there was no odor to the discharge, no great abdominal tenderness, no pelvic tumor, and no great sensitiveness of the uterus, nor was this organ enlarged. The same day I dilated the cervix, curetted her with a small, sharp curette, and gently packed the uterine cavity with 10 per cent iodoform gauze soaked in strong corrosive sublimate solution. I was not aware that anything went wrong with the operation or that it differed in any way from the usual run of such cases. I was, however, disappointed in not finding any soft tissue inside the uterus, which at once led me to regard the hemorrhage as from the tubes and not from the uterus,

which meant that the curettage would probably not entirely relieve the case.

On the second day I removed the uterine packing, the patient seeming to be all right and the hemorrhage controlled. On the third day I saw the patient again with her physician and was chagrined to find her in a very bad way. That morning she had had a chill followed by a temperature of 103° ; there was constant vomiting, the face pale and anxious; there was great vesical tenesmus, the urine passing in drops; the patient very restless and begging for relief from the pain; the abdomen was swollen and very painful, the patient unable to stand the slightest abdominal pressure. I was able to make out a tense, non-fluctuating tumor as high as the umbilicus, principally on the left side, but also extending some distance over on the right. The vaginal examination was very painful, and a firm mass was easily made out to the left and posterior to the uterus, extending down an inch or more below Douglas' pouch and somewhat over to the right side. The tumor, like Jonah's gourd, had grown in the night. A diagnosis of a pelvic extraperitoneal hemocele was plain enough. That such a tumor could form in a few hours, reaching up to the umbilicus, so large that it was evident on inspection, was hardly credible; and yet there it was, and the peritoneum had stood the strain. Two ice-bags were placed on the abdomen and morphine given to relieve the great pain. The pulse kept above 120, was weak and without tension. This great mass did not obstruct the rectum, as it usually does in these cases, but the bladder felt the pressure, and the urine was passed in small quantities at short intervals with great pain and tenesmus. Thinking there might be a distended bladder, the catheter was passed, but without result. This was August 6. The patient not only had this immense hematoma, but she was suffering from marked sepsis. The family declined any further operation, and the case was treated expectantly by measures to relieve the pain and reduce the fever: ice-bags to the abdomen, quinine, calomel, and salts, and morphine when the pain could not be borne.

There was no reduction in the size of the tumor, but rather a slight increase. The patient began to show rapidly the effect of the sepsis: loss of flesh, a yellow skin, a pained and wasted face, constant fever—reaching 102° or 103° in the evening, dropping to about 101° in the morning—rapid, weak pulse, with frequent vomiting, the stomach able to stand but little

nourishment. The uterine flow returned, with occasional small clots and with some odor.

On August 21, almost three weeks after the curettage, I induced the patient to enter the Savannah Hospital, and on the 22d I operated with the assistance of Dr. T. P. Waring, my plan being to evacuate the mass from the vagina, and only to go into the abdomen from in front should the simpler method fail. Every preparation was made for the major operation. Cutting through the posterior fornix, there was at once a great gush of chocolate-colored fluid mixed with pus which was very offensive. Introducing the finger, a large clot-lined cavity was evident. Using the finger alternately with a double-current uterine irrigator, I began to get out masses of offensive, semi-organized clot. This irrigation was kept up till I failed to dislodge any more clots by the finger and the current of water. The abdominal tumor was greatly reduced, and only a mass the size of an orange could be made out by bimanual palpation. A large glass drain was introduced, held in place by a vaginal packing, and through this the sac was washed out at frequent intervals.

The temperature dropped, the pulse became normal, the yellow skin and pained expression disappeared, the sepsis was gone. At the end of a week the glass drain was forced out by the contracting cyst walls. The patient left the hospital well on September 3 and has since left the city.

The study of this case is full of interest. That the hematocoele was a direct result of the cervical dilatation and curettage seems without question, and yet how was it done? I am not aware that I tore the cervix in the dilatation, although I have done that very thing two or three times in my life, but I was at once aware of it. I was not aware that I had punctured the uterine wall by the curette—another accident which I am sure, on one occasion at least, could be recorded against me. That I had infected the case there was no doubt, although all my instruments had been boiled and I had taken all the precautions I always do in these cases. Was the sudden stoppage of the menorrhagia by the curette the direct cause by a bursting of the overloaded veins of the pampiniform plexus, for example?—a frequent cause put down by Tait, who has very ably treated this subject. If an extrauterine pregnancy, the patient herself never suspected it, and I found nothing myself to even suspect its possibility. It is perhaps idle to speculate on what we cannot definitely determine, at least from this case.

Tait writes that pelvic extraperitoneal hematoceles are almost invariably innocent and are absorbed and get well quickly without interference. He makes no mention, however, of any one as large as this case. Emmet, in his work, has a good chapter on the subject and describes well one case relieved by incision through the vagina. That operative interference was called for is undoubted, and the rapid recovery from the simple vaginal incision and drainage shows the course to be pursued in similar cases.

A few months ago I assisted Dr. T. P. Waring in the removal of an intraligamentous cyst by celiotomy. It proved to be a hematocele full of a laminated, semi-organized clot, where the history of the case pointed to a curettage as the starting point of the trouble, although the evidence was not so direct as in my own case. These two cases seem to strengthen each other. They point out to us certain possible results of cervical dilatation and curettage which we have not been looking for, be the operation properly or improperly done. I have seen no mention of any such cause and effect in the literature on the subject.

11 JONES STREET, EAST.

THE ORIGIN OF OVARIAN CYSTS.

BY

MARY DIXON JONES, M.D., F.R.M.S.,

New York.

(With eight illustrations.)

THE eminent physiologist and professor in Cambridge College, England, said in 1891:¹ "Ovarian cysts, which are abnormal developments of follicles." Nearly two hundred years before, Dr. James Drake, of London, had said: "Dropsy, commenced by the Eggs, perhaps are no other than the Hydropsical Eggs themselves."² Thus early was this idea accepted. The last-named author continues: "It is not unlikely that all those Dropsies which Women labour with under the fallacious

¹ M. Foster: "Text Book of Physiology," 1891, vol. iv., p. 357.

² James Drake: "Anthropologia Nova, or a New System of Anatomy," London, 1707, p. 302.

Name of Tympanies, have their first rise in these Parts"—that is, from the egg vesicles.

That cysts are developed from the egg, or the Graafian follicle, has been acknowledged and recognized by many learned pathologists and scholars. G. Andrew, professor of the Faculty of Medicine of Paris, said in 1832:¹ "The vesicles scattered through the parenchyma of the ovary, in some cases become distended, enlarged, and at last transformed into cysts."

Samuel Ashwell, London, said:² "Ovarian dropsy, consisting of a single cyst, is attributed to morbid accumulations of fluid in one or more of the Graafian vesicles." Dr. John Hughes Bennett says the same.

Kiwisch wrote in 1860:³ "In our opinion, one of the most frequent modes of cyst formation will be found to depend on simple dilatation of the Graafian follicle."

Dr. Fox, Professor of Pathological Anatomy at the University College, London, said in 1864:⁴ "The pathology of these affections has still remained involved in considerable obscurity. It may, I think, be regarded as an established fact that both the simple and the multiple cyst of the ovary do, in the majority of cases, take their origin from the Graafian vesicles. . . . The conclusion may, I think, be fairly drawn that all cystic diseases of the ovary take their origin from these structures."

Alfred Meadows said in 1873:⁵ "The ordinary Graafian follicle may become an enormous ovarian cyst. I know of no more satisfactory explanation of the origin of these growths."

Lombe Atthill says: "Many pathologists now agree that the ovarian cyst is, in the first instance, the mere dilatation of a Graafian vesicle."

J. Cruveilhier⁶ says that many cysts of the ovary are developed from Graafian follicles.

But how can the Graafian vesicles, measuring one-one-hundred-and-twentieth of an inch in diameter, enlarge to great ovarian cysts? How can a single one grow to such an immense size as to contain sixty, eighty, one hundred and twenty, and more pounds of fluid, forming a cyst many million times its

¹ "Treatise on Pathological Anatomy," p. 428.

² "A Practical Treatise on the Diseases Peculiar to Women," p. 227.

³ Clay: "Disease of the Ovary," London, 1860, p. 101.

⁴ "Medico-Chirurgical Transactions," vol. xlvii., p. 227.

⁵ "Obstetrical Transactions," London, vol. xiv., p. 39.

⁶ "Traité d'Anatomie Pathologique Générale," 1856.

own size? Can a vesicle so stretch? Does it form new tissues, or can an egg vesicle develop into another structure? Are we not to recollect the fundamental fact in pathology that for any change of structure the tissues must first be reduced to an embryonal condition, and, when so reduced, this new tissue may develop into any form of growth or tissue? There are cysts found in other parts of the body where there are no eggs or Graafian follicles; so there must be some other mode of formation of cysts than from Graafian vesicles. There may be a cyst formation in any part or structure of the body, but that does not indicate that the special part or structure originates or develops the cyst. In every instance there will be found some disease or pathological condition that precedes or produces them.

Carl Rokitansky said:¹ "Simple cysts in many cases are undoubtedly formed from the Graafian follicle. They are probably, however, as often new formations from the beginning."

Spencer Wells wrote:² "There are often discovered, in examinations of the ovary, cysts which bear no relation to Graafian follicles or corpora lutea, but which seem to have originated in the deep areolar tissue or among the vessels of the glands."

R. Olshausen says:³ "The cyst formations in the ovarium, dependent on the dilatation of the Graafian follicle, present themselves in very different forms." This learned author thinks the larger cysts are a union of the smaller Graafian follicles. But how can this union take place? How can a number of Graafian follicles unite and grow into one mass of cysts? The author further states: "The origin from Graafian follicles could not be demonstrated unless we could show the ovule in the smaller cysts. This was first done by Rokitansky." But Kiwisch, who probably has given equal attention to the subject, says: "So far as we have observed, no ovum can be discovered in them, even in the first stage of the malady."

Vogel, in 1847,⁴ gives what he considers the origin of dropsy: "When in a local, circumscribed serous dropsy the fluid is

¹ "Pathological Anatomy," 1855, p. 248.

² "Ovarian and Uterine Tumors," 1882, p. 21.

³ "Handbuch der Frauenkrankheiten," Stuttgart, 1886, p. 308.

⁴ Julius Vogel: "Pathological Anatomy of the Human Body," London, 1847.

effused in a part consisting of lax areolar tissue, or under a thin membrane, it forms a vesicle resembling blisters so frequently observed upon the skin after burns or vesicants, etc. In this case the cyst is not a new structure, but consists of normal tissue distended by the dropsical fluid." Can we accept the idea that a cyst is "normal tissue distended"? In a blister from a burn or vesicant, are not the tissues injured by the heat or chemicals, and do they not in this morbid condition throw out the fluid? Of course dropsical fluid may permeate normal tissues, but this is not a cyst. Vogel further states: "These misnamed hydatids are, therefore, only local edema modified by the histological condition of the affected part, and originate according to the same laws as edema generally."

Wedl. of Vienna, says:¹ "It was formerly very generally supposed that the cysts in the parenchyma of the ovary originated in the Graafian follicles, but no direct proof of this was ever given. . . . According to our notion (p. 84), the cyst consists of an excessive augmentation of volume of the areolæ of the areolar tissue and of the papillary new formations composed of connective tissue."

Coblentz says:² "The true ovarian cyst is developed wholly and solely from the tissue of the parenchyma of the ovaries, the seat of the Graafian follicles themselves."

Dr. Noeggerath:³ "I now believe to be able to prove that not a very small number of the adenoma cylindro-cellulose are but altered and enlarged blood vessels, consequently this variety ought to be called angioma cysticum." Blood vessels may be destroyed or reduced by inflammation to an embryonal tissue, and from this embryonal tissue may be developed a cyst; but blood vessels, as blood vessels, cannot be changed into cysts.

Alban Doran says:⁴ "Cystic disease of the ovary has been assumed to originate from the Graafian follicle, from corpora lutea, from the ovarian stroma, by a degenerative softening, from certain morbid tubules, epithelial structures, and, lastly, from changes in the large blood vessels in the tissue of the hilum."

¹ "Rudiments of Pathological Histology," Vienna, 1855, p. 462.

² London Medical Record, March 15, 1822, p. 81.

³ "Diseases of the Blood Vessels of the Ovary in Relation to the Genesis of Ovarian Cysts," AMERICAN JOURNAL OF OBSTETRICS, 1880, vol. xiii.

⁴ M. D. Harris and Alban Doran: Journal of Anatomy and Physiology, vol. xv.

Gaston Poupinel¹ is of opinion that "the cysts of the ovaries are of "many varieties: 1. Dropsies of the follicles of De Graaf. 2. Kystes de nature épithéliale. 3. Dermoid cysts. 4. Kystes mixtes à la fois dermoïdes et mucoides. Virchow, Martin, Coblentz, and others report many rare examples."

Sappey says:² "The cysts of the ovary have their origin from the vesicles of De Graaf, Pflüger's ducts, lymphatic vessels of the ovary, and in the egg itself."

Scanzoni said:³ "*Simple cysts* are formed in consequence of an abnormal augmentation of the liquid contained in the Graafian vesicles. . . . *Multiple cysts*, on the contrary, depend on a particular specific alteration of the tissue which constitutes the normal parenchyma of the ovary."

Emmet tells us:⁴ "The ovarian cystomata develop from a hyperplastic formation of the tubules of Pflüger."

De Sinéty and Malassez⁵ give the following mode of origin of ovarian cysts: 1. Ovarian cyst by dropsy of the follicles of De Graaf. 2. Ovarian cyst by a new formation of epithelia. 3. Other forms of cysts of the ovary—1, Cysts of yellow bodies or corpora lutea; 2. Blood cysts; 3, Cysts by transformation of the ovarian tissues. The authors add: "The origin is from follicles, Pflüger's ducts, and germinative epithelia of the ovarian stroma." "Toutes ces hypothèses sont possible; mais c'est la dernière qui nous paraît la plus vraisemblable." None of these appear to us "possible" or "vraisemblable." How have Pflüger's ducts the ability to change themselves into ovarian cysts? And, if so, why cannot any structure of the body as easily develop into some other anatomical formation? Just as difficult is it to see how epithelia, as epithelia, can change into and form cysts. Even if the epithelia are reduced to an embryonal condition, have we any certainty they will form ovarian cysts or some other structure?

J. C. Warren, of Harvard University, says:⁶ "Cysts of the ovary were formerly supposed to be developed from a Graafian

¹ "Remarques sur l'anatomie pathologique des kystes mucoides de l'ovaire," Rev. de Chir., Paris, 1886, vol. vi., p. 457.

² "Sur la structure, l'origine et le développement des kystes de l'ovaire," Archives de Physiologie, Normale et Pathologique, Paris, 1878, p. 512.

³ The Diseases of the Sexual Organs of Women, 1856, pp. 407-10.

⁴ "Principles and Practice of Gynecology," 1884, p. 666.

⁵ Archives de Physiologie, series ii., vol. v., 1878.

⁶ "Surgical Pathology and Therapeutics," 1900.

vesicle by distension of such a cavity with fluid. Small cysts may develop also in the corpus luteum. True cystoma is, however, epithelial in its origin, and in many cases it begins as an adenoma."

T. Henry Green asserts:¹ "There are two principal modes by which cysts originate. The first and most frequent is by the gradual accumulation of substances within the cavities of pre-existing structures. The second and less frequent mode of origin is by the independent formation of the cyst in the tissues."

N. Senn states:² "As cysts of the ovary have so many different histogenetic sources from which they take their origin, the student must familiarize himself with the development of the ovary in the embryo in order to enable him to trace the different kinds of cysts to their proper embryonic matrices." He refers to Alban Doran.

From all these eminent authors I find no clear explanation as to the origin of ovarian cysts. In my microscopical studies, for the last twenty years, of the minute anatomy of the ovary and the morbid changes, I was anxiously studying sections, to find out the nature of the special disease and to learn, if possible, the cause of suffering. So absorbed was I in the magnitude of these considerations that I did not stop to inquire about cysts. I often noted the intense inflammation always seen in the wall, but considered this only a part of the individual case or a part of the general oöphoritis, and that these fields of inflammation in and around the cyst wall only more decidedly indicated the state of the ovary. I scarcely thought of the origin of cysts till June, 1899, when I was about finishing my microscopical investigations in regard to "Colloid Degeneration of the Ovary,"³ when the thought was forced upon me. I could see again and again the intense inflammation in the cyst wall, and in every instance when the cyst wall was thus inflamed it was separating, crumbling, and the parts passing into the cyst fluid. There could be no mistake: there were the broken remnants of the cyst wall floating out (see Figs. 2 and 3). The cyst was increasing in size, and the intense inflammation of the adjoining tissues showed that it would grow yet larger. Any tissue

¹ "Introduction to Pathology and Morbid Anatomy," 1898, p. 261.

² N. Senn: "The Pathology and Surgical Treatment of Tumors," 1900.

³ "The Fourth Hitherto Undescribed Disease," Medical Record, November, 1899.

of the ovary, any structure, can become inflamed, and in any tissue or in any structure in which inflammation exists a cyst may be developed. This is the beginning and origin of ovarian cysts, *the only condition that can produce a cyst of any nature*. There is first inflammation, the tissues reduced to an embryonal condition, and then the new growth, the cyst formation. Since June, 1899, I have made much investigation to remove all possible ground of doubt. When a tissue is reduced to an embryonal condition any growth may be developed. The inflammation may result only in a new formation of fibrous connective tissue, and this may again break down into inflammatory corpuscles. I have seen this repeatedly. New fibrous connective tissue resulting from inflamed tissues seems more disposed to break down into inflammatory corpuscles than ordinary fibrous connective tissue or than the original normal structure from which new fibrous connective tissue may have been formed. From the inflammatory or protoplasmic tissue may come any growth—carcinoma, sarcoma, or there may be developed a gyroma, an endothelioma, or an ovarian cyst.

It has long been recognized that the ovary has a tendency to the formation of cysts. Sappey¹ said: "The ovaries are, of all the organs in the economy, those in which are most frequently formed cysts." Thomas Denman,² fifty years before, had said: "From the vesicular structure of the ovaria there may be in them some inherent disposition to this disease." Kiwisch³ says: "The formation of cysts in the ovary is one of the most frequent pathological illustrations which are met with."

The following diagrams are taken from sections of the ovary prepared for microscopical investigation. In each section most of the normal structure is destroyed by cyst formation. The tissues around and between the cysts show, when magnified five or seven hundred diameters, various pathological conditions.

Nos. 1, 2, and 9 are sections of the ovaries of Mrs. A. The patient had pyosalpingitis, and in each ovary were endotheliomatous growths and gyromatous cysts.⁴

No. 3, section of left ovary of Mrs. M. G. Both ovaries

¹ "Nouveau Dic. de Médecine et de Chirurgie," 1872, p. 507.

² "An Introduction to the Practice of Midwifery," London, 1821, p. 150.

³ 1864, p. 101.

⁴ Case 72, Medical Record, August 7, 1897.

were in a state of intense inflammation. No normal structure found in either. Left ovary enlarged into a blood cyst. Right ovary an endothelioma changing to a hematoma.¹

No. 4, Mrs. R.,² married some years, no children. Ovaries intensely inflamed, containing large gyromatous cysts, waxy ova; salpingitis. No. 5, Mrs. F.,³ left ovary and tubes fixed by firm adhesions, in some places bound to the colon and to the appendix vermiformis. Both ovaries showed intense inflammation and were full of endotheliomatous growths and gyromatous cysts. No. 6, Miss H.,⁴ salpingitis, oöphoritis, hematoma. No. 7, Mrs. B., both ovaries intensely inflamed

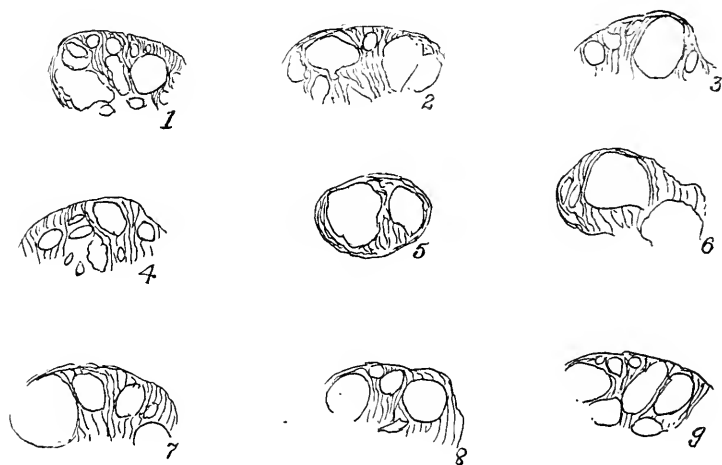


FIG. 1.—Sections of ovaries. Life size.

and many small cysts present. No. 8, Mrs. L.,⁵ pyo-interstitial salpingitis, oöphoritis, and cyst formations.

Each of these sections, under the microscope, shows profound disease. The trouble with each patient commenced in inflammation, local or general oöphoritis. Each complained of great and constant suffering, and for each it was decided best to remove the diseased structures. All made good recoveries and were restored to health.

While cysts in the ovary are the outcome of inflammation, they may also be considered as a form of degeneration of normal tissue. The formation of a cyst is evidence of disease or

¹ Case 24, Medical Record, August 7, 1897.

² Case 66, Medical Record, August 7, 1897.

³ Case 22, *ibid.*

⁴ Case 78, *ibid.*

⁵ Case 59, *ibid.*

a proof that more or less oöphoritis has been and is still existing. We draw the following general conclusions:

1. Cyst formations are the outcome of disease.
2. No ovarian cyst, small or large, exists without a previous oöphoritis.
3. Other things being equal, the more intense the inflammation the more rapid is the growth of the cyst.
4. There can be no cyst without a reduction of the tissues to protoplasm.

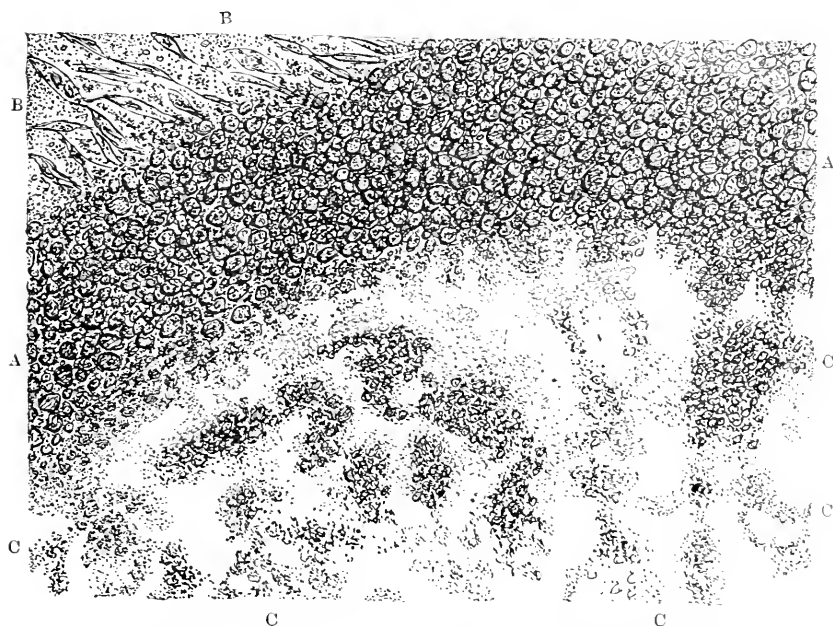


FIG. 2.—Wall of a growing cyst. $\times 500$. A, wall of the cyst reduced to inflammatory corpuscles; B, myxomatous tissue, partially reduced to protoplasm; C, broken-down protoplasmic tissue in the cyst fluid.

5. This reduction to protoplasm is what we call inflammation.

6. Cysts are always the result of inflammation and are always accompanied by more or less pain, distress, and disturbance of the general health.

The whole subject of cyst formation may be made clear by referring to the principle that for any tissue change or new formation the parts must first be reduced to protoplasm or to an embryonal condition, and from this embryonal tissue may be developed any new tissue or new formation. It is only

when there is inflammation that there is any new growth or new formation.

Illustrations showing the Origin of Cysts.—Fig. 2 shows the intense inflammation around the cyst wall. A portion of the tissue of the ovary (A) is already reduced to inflammatory corpuscles or to an embryonal condition, and this protoplasm or granular material is breaking down and passing into the cyst fluid, and thereby the cyst is being formed and increased in size. In this patient there was found intense inflammation

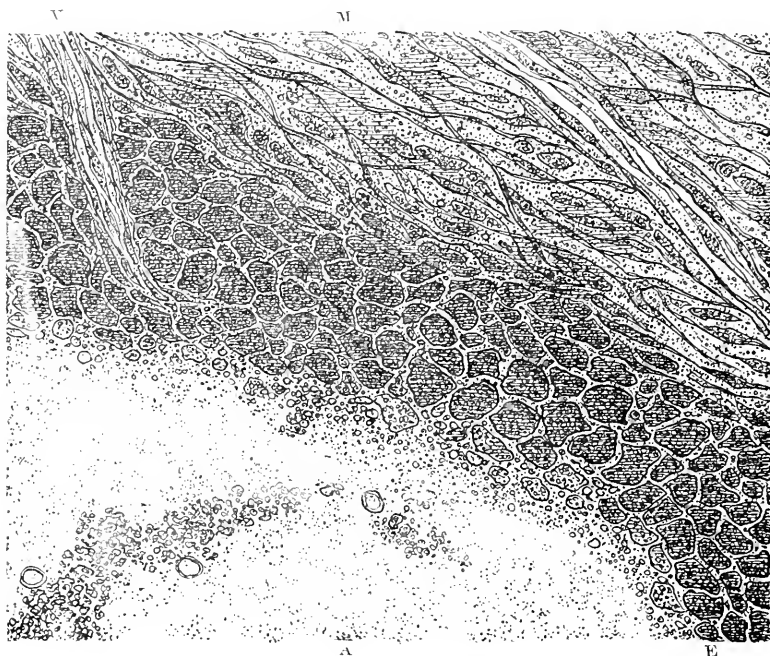


FIG. 3.—Wall of a growing cyst. $\times 500$ E, polyhedral bodies with the appearance of epithelia; A, coagulated albumin; M, myxomatous tissue, partially reduced to protoplasm; V, V, obliterated capillary blood vessels.

of both ovaries. She was operated on for large fibroid growths in the uterus, which probably were produced by the disease of the ovary and of the Fallopian tubes, the latter showing pyosalpingitis. I said in 1888, of another case:¹ “The disease of the uterine appendages may have caused the growth of a fibromyoma.” “In every instance in which I have removed the uterine appendages for bleeding fibroid, I have found them so

¹ New York Medical Journal, August and September, 1888.

much diseased that on that account even their removal was a necessity. In almost every case of hysterectomy for uterine myoma, when the appendages are referred to, they are mentioned as being in a state of disease; and in many instances when they are supposed to be normal, the microscope will doubtless reveal a condition of long-existing disease and degeneration."



FIG. 4.—A forming ovarian cyst. $\times 500$. C, cyst wall; A, arteries; D, commencing suppuration.

Fig. 3 shows another cyst wall, the tissues breaking down and passing into the cyst fluid.

Fig. 4, an even more intensely inflamed cyst wall.

In one, two, or three places there seems to be a commencing suppuration. This is a much larger and older cyst. Already quite large portions of broken-down tissue have passed into and helped to form the cyst fluid; and the intense inflammation shows that the tissues would have continued to break down and the cysts consequently would rapidly increase in size.

I have seen cysts, in the very commencement, forming in different tissues, not developed from other structures, but the tissues are reduced to granular material; this breaks down, and the granular material floats out into the cyst fluid.

Fig. 5 represents a cyst forming in a gyroma or corpus luteum. A gyroma is a growth the result of inflammation, and is what is generally known as a corpus luteum. This gyroma is again reduced to inflammatory or embryonal tissue, and then forms countless millions of endothelia. Next, in the newly-formed endothelia appear the colloid bodies, all showing

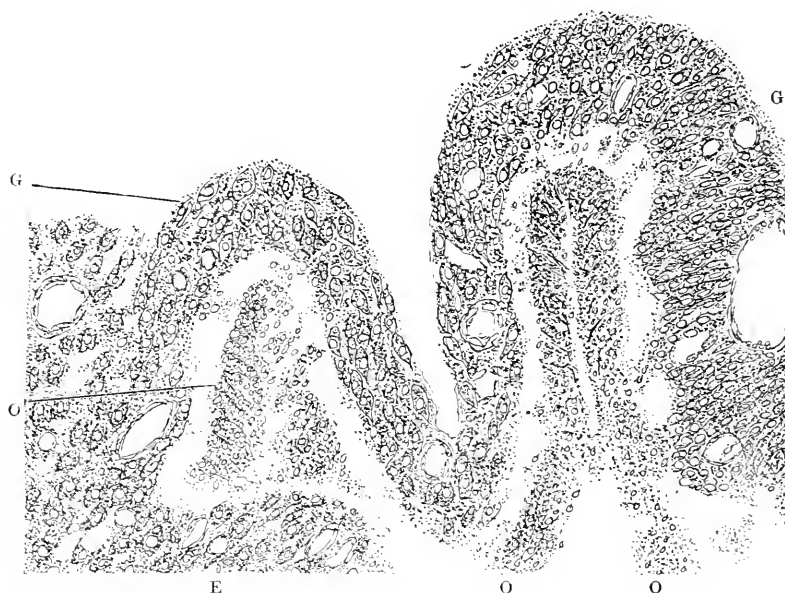


FIG. 5.—A portion of the wall of a gyroma or corpus luteum. $\times 500$. O, internal portions of the wall breaking off and passing into the cyst fluid.

intense disease. Now the whole formation is gradually breaking down and forming a cyst. In the midst of the endothelia are also blood corpuscles. I have often seen them in the midst of morbid and myxomatous tissues. Does this signify that the tendency of diseased ovarian tissue is to a formation of blood corpuscles?

Alban Doran, H. C. Warren of Harvard University, De Sinéty and Malassez, and Rokitsansky¹ refer to the development of cysts in corpora lutea. Emmet (page 663) quotes

¹ Lehrbuch der pathologisch. Anat., iii., 1861, p. 419.

Rokitansky as saying: "I have myself seen one such case in which there was the cyst of the corpus luteum in the ovary of a patient who had died of hemorrhage during a miscarriage." Fox says:¹ "Although it is not improbable that aberration in the formation of the corpus luteum may occasionally give rise to cysts—and instances of this have come within my own observation—yet I do not think that it is a frequent occurrence or that cysts thus originating attain a large size."

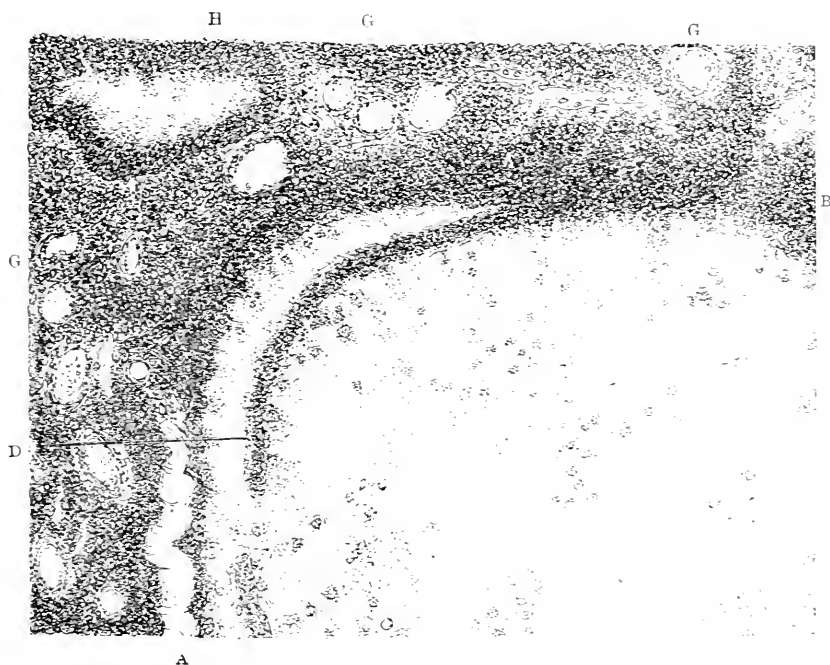


FIG. 6.—Portion of the original Graafian follicle in waxy degeneration. B, the forming cyst wall; D, portion of the cyst wall breaking down and passing into the cyst fluid; G, blood vessels; H, a new-forming cyst.

I have frequently found cysts developed in the corpora lutea; so frequently that, if we did not look to a higher principle, we might imagine that the corpora lutea were the origin of cyst formations. I have sometimes seen in the same section of the ovary several cysts originating from corpora lutea. All authors seem to emphasize the assertion that cysts formed in corpora lutea are uniformly small. I have seen cysts, originating in corpora lutea, spreading over the whole section of the

¹ Medico-Chirurgical Trans., London, vol. xlviii., p. 227.

ovary, even growing larger than other cyst formations. What is known as the corpus luteum is a secondary formation, a lower grade of tissue, and therefore may more readily break down into protoplasm and form other tissues or form ovarian cysts; and there is no reason why these cysts, other conditions being the same, may not grow as large as any other ovarian cyst. When a cyst is very much increased in size, the immediately surrounding tissue is lost, and it would be difficult, if not impossible, to say in what special structure the cyst may have originated.



FIG. 7.—A, remains of myxomatous tissue; B, fibres of connective tissue to form the permanent cyst wall; D, a portion of the waxy wall of the original Graafian follicle; G, blood vessels; C, a neighboring or adjoining cyst, in the fluid of which are blood corpuscles.

Figs. 6 and 7 are representations of different parts of a cyst forming in a corpus luteum or Graafian follicle. At A we see a portion of the remains of the wall of a corpus luteum, which wall was in waxy degeneration. In other portions of the cyst wall we see remnants of the same wall of the corpus luteum or gyroma that was in waxy degeneration, especially in Fig. 5,

¹ This subject will be more fully discussed in a paper on corpus luteum.

at the smaller end of the cyst; the shadow of it is seen through the granular material. Along the edges of the wall of the cyst we see also a few remains of myxomatous tissue that filled the cavity of the ruptured Graafian follicle. At *B* (Fig. 7) we see the beginning of the wall of the forming ovarian cyst. The life tissue or protoplasm seems to have the power of building up any new structure.

Fig. 8 represents two cysts near the periphery of the ovary. The larger portion of this same ovary was occupied by an extending gyromatous cyst, views of which are to be seen in

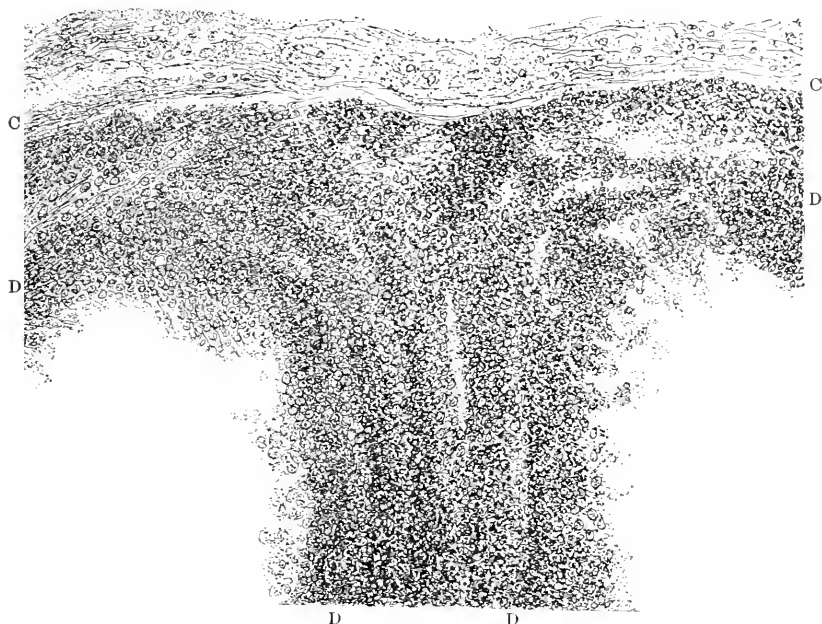


FIG. 8.—Two adjoining cysts. C, C, periphery of the ovary; D, walls of the cysts in intense inflammation; H, walls of the cysts breaking down and passing into the cyst fluid.

several sections. The walls of the two cysts show the most intense inflammation, especially where in one place they are in juxtaposition and united by inflammatory tissue. The inflammation of the walls of the cysts seems to involve the whole cortex of the ovary and extends to the periphery. All the special structures of the ovary are destroyed in this part of the cortex. Adjoining the periphery of the ovary are the inflammatory or peritoneal adhesions, in some places partly separated from the ovary. In the inflammatory adhesions we see the new fibres of forming connective tissue, and in the midst of

these fibres some inflammatory or embryonal corpuscles and masses of granular tissue. Even in the inflammation of some parts of the cortex are some fine fibres of newly forming connective tissue, and all over the cortex is seen the spreading inflammation, in some places forming abscesses. This woman had pyo-interstitial salpingitis. The ovaries were enlarged to three and one-half inches in diameter, each containing a blood cyst. Other portions of the ovary were intensely inflamed and contained other forms of cysts. Ova were also destroyed by inflammation or waxy degeneration.

The intense inflammation often observed in cyst walls and in neighboring tissues is no doubt the reason why so many of those cysts become malignant. Poupinel¹ says: "Out of 600 cases of tumors of the ovary operated upon by Schröder, 100 were malignant. This carcinomatous transformation of the cysts of the ovary appears to be very frequent. Coblentz, in *Virchow's Archiv*, lxxxii., p. 268, repeats the same opinion, also Breisky, Klob, Marchand, Olshausen, Schröder, and others. De Sinéty and Malassez describe in great detail this form of evolution of the epithelial tumors of the ovary, and we have found many instances recorded in various scientific reviews." Hecht says: "Les kystes dermoïdes de l'ovaire sont sujets à devenir carcinomeux." This marked inflammation, this complete reduction of the tissues to inflammatory material or to an embryonal condition, explains the new formation, carcinoma or other malignant growths. The inflammatory corpuscles of the internal wall of the cysts are gradually breaking off and falling into the cyst fluid. When the cyst is formed in tissues in colloid degeneration, the colloid material passes into the cyst and appears in the fluid. Sometimes a cyst is formed in an endothelioma; then we see the endothelia breaking off and passing into the cyst fluid. The cyst fluid will necessarily partake somewhat of the nature of the tissue in which the cyst is formed. It is part of the tissues.

Drysdale says, as quoted by T. G. Thomas: "On placing a drop of the fluid removed from an ovarian cyst under the microscope, we usually find a number of granular cells, some free granular matter," etc. In every forming cyst "granular cells and free granular matter" are found in great abundance. They are the protoplasm of the broken-down tissue, and are always, so far as I have seen, found in the forming cyst fluid. Their presence in great abundance corroborates the fact that

¹ Rev. de Chir., Paris, 1886, vol. vi., p. 457.

the method I have here presented of cyst formation is the true theory, viz., that cysts are formed from the breaking down of diseased tissues. Thomas continues: "Dr. T. M. Drysdale, of Philadelphia, has recently described a cell which he calls 'the ovarian granular cell,' which, when found in pelvic tumors, he regards as pathognomonic of ovarian disease, and as such he looks upon its diagnostic value as very great." But, says Thomas, "so far as my knowledge goes, a very general scepticism with regard to it prevails. . . . Very little is positively known upon this subject."

All the cyst walls here presented are *masses of granular material*, countless "granular cells," and "free granules." The whole cyst wall, before it falls to pieces, is composed of inflammatory material, or "granular cells," or disintegrated tissue. This I have seen in innumerable instances in well-prepared specimens by a power of 400 and 700, Harknack's lenses.

Alfred Meadows¹ says: "I can hardly dare hope that more accurate knowledge of pathological processes as applied to this particular disease will help us to check or control or divert the morbid action." With the ordinary theories given as to the origin of ovarian cysts, I do not see that we can "check," "control," or "divert" the morbid action, but with the explanation of the formation of cysts which I have here presented there are at once suggested many ways by which this may be accomplished. With the most simple rules in regard to the preservation of health the circulation may be *kept balanced*, thereby preventing local congestion and commencing inflammation. If we do not want to see continually these pathological wonders, women must learn to obey the physiological laws of health. T. A. Emmet² quotes Hegar as saying: "Much may be accomplished in a prophylactic way—improved education and physical care of the growing girl." Emmet says: "As a profession we should be judged derelict if we do not instruct the masses in regard to these matters and in the proper mode of educating the females of the coming generation." I believe every young girl and woman should be instructed in the principles of health—personal and household hygiene. In a small way I have attempted to do this, by writing, in lectures to women on health subjects, and even in dispensary rooms to the poorest.

249 EAST EIGHTY-SIXTH STREET.

¹ "Obstetrical Transactions of London," 1873, vol. xiv., p. 39.

² "Principles and Practice of Gynecology," 1884, p. 660.

TRANSACTIONS OF THE WASHINGTON OBSTETRICAL AND GYNECOLOGICAL SOCIETY.

Stated Meeting, February 2, 1900.

The President, S. S. ADAMS, M.D., in the Chair.

DR. H. D. FRY read the paper,

AN INDICATION FOR SYMPHYSEOTOMY, WITH REPORT OF A CASE.¹

DR. JOHN F. MORAN said Ayers' operation has a very small incision and is the simplest of the three, but it is not as free from objection as the Italian. A case reported by him a year ago had gonorrhea, and he thought if Ayers' method had been used the joint would probably have been infected; by the method he used he was able to pull the wound free from the infected parts with retractors. He found no trouble in opening the joint and got perfect union. By the open method you are able to see if the bladder is pinched in the joint, and all hemorrhage from torn pelvic fascia is easily controlled. Harris, of Chicago, has suggested detaching the pelvic fascia. The speaker thought well of this, owing to the large blood supply about the neck of the bladder, the tearing of which vessels would be obviated. Symphyseotomy might be applied to all cases of delayed labor when it might endanger the child's life to deliver by other methods, as in mental or face presentations.

DR. J. WESLEY BOVÉE said he thought the idea of doing a symphyseotomy by a subcutaneous method devoid of surgical principles. There is danger of hemorrhage, septicemia, and failure of joint union. He would open the joint and see the bleeding, and he would suture the bones in apposition, which would prevent the fibrous union. If you have hemorrhage into a punctured wound you have a favorable place for infection, especially in a locality so close to those organs so prone to cause it. If you do make a subcutaneous incision it is best made below for drainage. He saw Dr. Fry's case and heard the heart distinctly. Some of the consultants thought it best to try forceps again, but it was considered best not to do so, for if it failed it would the more endanger both lives. He thought an incision from above would have been better in this case.

DR. T. C. SMITH asked the size of the child's head. Dr. Fry answered, medium. Dr. Smith, continuing, said he did not

¹ See original article, p. 487.

think it a case for symphyseotomy, but for Cesarean section. He thought the death of the child, not from the strychnia, but from the prolonged labor. The dose of strychnine was not a large one, and Dr. Fry ought not to blame himself. He thought the patient might have trouble later from the fibrous union.

DR. A. A. SNYDER said he would like to hear more of the method as described by Dr. Fry. He thinks he would like the method as described by Dr. Moran better.

DR. W. S. BOWEN said he saw the operation; it was very short and the result was perfect.

DR. H. D. FRY said he thought the proper procedure in this case was symphyseotomy, and that harm is done by trying too often with forceps. He records this case on account of the ease with which it was done by the Ayers method. He was surprised to hear Dr. Bovée say that a subcutaneous incision is more liable to infection. In regard to hemorrhage, it is not what the knife does, but the tearing of the subcutaneous tissue. Even in the open method there are no vessels to ligate. The blood comes out of the mass of veins like water out of a sponge, and the ligature is put on *en masse*. He thought the recommendation of Harris good, but you could not do it by Morisani's method. The incision would have to be lower down and there would be more likelihood of infection. There is no question but that Ayers' is the simplest operation. In his case there was plenty of separation, and he thought there would not have been any more hemorrhage if more separation had been required. As to suturing the bones, he thought if Dr. Bovée had read up the literature he would have found that it had been done and abandoned. If the ends are well brought together and kept for three weeks they will stay. He gets perfectly normal union, which is the fibrous union spoken of in his paper.

Stated Meeting, March 2, 1900.

The President, S. S. ADAMS, M.D., in the Chair.

DR. W. S. BOWEN reported

A CASE OF MALARIA IN AN INFANT ONE WEEK OLD.

The microscope showed estivo-autumnal variety. The temperature was as high as 104.8° (rectal), which responded to the use of quinine by suppository. The mother's temperature was normal before labor and during three weeks subsequent thereto, as long as taken, not being over 99° at any time.

DR. W. M. SPRIGG thought the infection could not have come from the outside, and that the mother's blood should have been examined.

DR. WILLIAM P. CARR read the paper, entitled

THE OBJECTIONS TO SYMPHYSEOTOMY AND HOW TO
OVERCOME THEM.¹

DR. JOSEPH TABER JOHNSON said, when this subject was introduced, after having fallen into disuse for so long, it attracted wide interest, and he had provided himself with a Galbati knife. It was held as one of the alternatives of craniotomy, especially before Cesarean section was made so free from danger. It has been done at times by incompetent surgeons, and the urethra and bladder have been injured, hemorrhage has been alarming, and the union of the bones has not been what we would desire, and for these reasons it has been in danger of falling into discredit.

Theoretically and from what he had observed, it is the most valuable resource of any of its alternatives. If the case has been studied, as it usually is now, the urine examined, the dimensions of the pelvis ascertained, we may deliver easily by symphyseotomy and get a live child. In regard to the operation itself he had had no experience. The essayist had suggested more dangers from the operation than he had ready on his tongue. It is a great thing to get a living child and mother, but greater to have them both well afterward, as seems to be the case where the bones are wired. If the patient has been allowed to be in labor a long time, sepsis having already taken place, with a vaginal discharge, the best results could not be expected. If the indications for the operation are perceived before labor, it is very much better for the patient; her good condition is just as important as in other operations. It should be an operation of election, and not as a last resort after all other means have been tried. The principal difficulty seems to be in securing good bony union, which appears almost impossible with adhesive strips or bandage. This the essayist seems to overcome by wiring the bones, and if he had a case of symphyseotomy he would certainly adopt this procedure.

DR. CARR said the mortality of Cesarean section is about the same as the symphyseotomy of to-day, but when we get the improved symphyseotomy it will be better. If the results of the unimproved Cesarean section are compared with symphyseotomy they will be found in favor of the latter. He read his paper because he was so sure that the mortality can be reduced. He did not claim anything new or original, except his incision is higher up; he did not think the vagina can be made clean enough to be so close to a bone wound. He puts in a short claw retractor, and the skin can be drawn down two inches. Dr. Fry had called it a compromise between the subcutaneous and open methods; he insists that it is an open method. He thought the wiring of the bones has been condemned unjustly. It is contrary to our ideas of the principles of surgery that silver wire could cause a necrosis. He thought it had probably been done by unskilful men, who had been

¹ See original article, p. 474.

accustomed to operate on the cervix and vagina and did not exercise the proper principles for bone surgery. He had tried silk in the softer tissues, and although the tissue seemed tough it did not hold; wire is the only means of holding the bones in apposition. A great many so-called scientific writers say that the use of forceps just before symphyseotomy is wrong; he thought it proper. You may be able to deliver without operation, or you may find out that it is impossible to deliver with symphyseotomy. By bringing the head well down with forceps you can tell whether you can deliver when the bones are separated. Wiring of the bones is easy. Danger of rupture of the bladder is not remote. In his second case he could hear the bones knocking together on the slightest movement of the patient, and in a few days urine came out of the incision, the urethra having been ruptured through.

Stated Meeting, March 16, 1900.

The President, S. S. ADAMS, M.D., in the Chair.

DR. J. WESLEY BOVÉE presented a specimen of

DOUBLE TUBO-OVARIAN CYSTS

he had removed February 23 from a white woman 42 years of age, and with them the body of the uterus. The adhesions were severe, and, in spite of very great caution in separating a loop of small intestine from the junction of the left tube and uterus, a perforation was found in it. As the injury to the bowel for a distance of three inches at this point was so great, this portion of it was resected and anastomosis made by means of a Murphy button. An additional feature of interest in this case was double nephroptosis, which was not interfered with, as the patient was very feeble. The button was expelled from the rectum on the fifteenth day. Dr. Bovée said considerable obscurity as to the etiology of these tumors still exists. They have generally been considered as tubo-ovarian abscesses in which the pus has undergone caseation and liquefaction. In support of this view may be mentioned the presence, in the small recesses of their walls, of cheesy-appearing material. Tubo-ovarian abscesses are common, and it is presumable that tubo-ovarian cysts are more common than generally believed. Yet oftentimes no trace of inflammation is to be found in the walls of these tumors, as are found in the walls of pus collections in these organs.

DR. BOVÉE also presented a specimen of

DOUBLE OVARIAN DERMOID TUMORS

he had removed a few days before from a colored woman who had been sent to the hospital for some plastic vaginal work as a result of difficult delivery some months since. He had found these tumors freely movable upon examination, and

removed them with the body of the uterus. They had both been examined by the pathologist of the hospital, Dr. James Carroll, who pronounced them both dermoids. Dr. Bovée said in preparing a paper a few months ago on the subject of "Removal of Both Appendages during Pregnancy," he had found, of the 38 cases in which this operation had been done, 23 were for various forms of cysts of the ovary, and of these 10 were for dermoids, 8 of them being double—*i.e.*, on both sides. He had operated a number of times for dermoid cyst of both ovaries, and he was not prepared to believe this condition was as rare as most writers state. An interesting point in these tumors he exhibited was that both of them were rotated on their axes. As these tumors are apt to be irregular in shape, twisting of the pedicle was not uncommon. In Thornton's case of removal of double dermoids during pregnancy, one of the pedicles was twisted once, and in Gardner's case three times. Dermoid tumors were very dangerous when for any reason their circulation has been interfered with for some time and if suppuration has begun in them. With twisting of the pedicle they are especially liable to such changes.

DR. BOVÉE presented a third specimen, one of a very large mass of

UTERINE FIBROIDS

he had removed from a colored woman about two weeks before. The patient was 37 years of age and was never married. She had been in the care of a physician for about a year and had been treated with mammary extract. The physician stated she had noticed some diminution in the size of the mass and a considerable lessening of the blood loss during the early part of the use of the remedy. Later, however, the mass was noticed to take on an increase in size and amount of blood loss, and he had referred her to him for hysterectomy. He found a mass of fibroids extending from the ensiform cartilage down to the perineum, and the pelvis jammed full by one large tumor that left practically no vagina. The cervix could not be felt. When the tumor mass was removed the incision extended from the pubes to nearly the diaphragm, and the uterine arteries could not be felt until after enucleation of the large tumor occluding the pelvic excavation. By free use of normal salt solution hypodermatically and by leaving it in the abdomen, the condition of the patient was excellent at the end of the operation, her pulse being but 68 when she was removed from the operating table. She has not had an hour of suffering since the operation, which is mentioned to demonstrate the ease oftentimes resulting from the most severe operations.

DR. G. WYTHE COOK read the paper, entitled;

CHRONIC CONSTIPATION IN INFANTS AND YOUNG CHILDREN.¹

DR. H. B. DEALE said there was nothing that caused more

¹ See original article, p. 470.

embarrassment to the physician than constipation in infants. The treatment consists in finding the proper diet in artificially-fed babies, though it is just as difficult to treat constipation in breast-fed children. He laid stress on giving the infant plenty of sterile water. When due to atony of the bowel massage is valuable. He thought this latter agent not well understood; it is not simply rubbing, but kneading, first slightly and then deeply. He thought enemas and drugs to be deprecated; they frequently do harm. Olive oil, as suggested by Dr. Acker, is a food as well as a medicine and can be tried.

DR. ROY spoke of giving the child water and also salt, which caused the child to drink more and helped the absorption of water from the system. The adding of some substance to the milk that is undigested, as starch, is also of service.

DR. J. T. WINTER condemned enemas, as they frequently enlarge the bowel and do harm. He had good results from a small cone of soap.

DR. S. S. ADAMS said there is a misconception of what is constipation. It depends on, not the number of stools, but the character. He also spoke of determining the amount of milk in certain specimens of milk, which should not be left to the parents and nurse. He spoke of some of his experiences with some specimens which were apparently all right. He very seldom gives medicines, except the phosphate of soda. Orange juice, a teaspoonful in the morning and afternoon, to a child 6 months old, especially if it is bottle-fed, is good: in older children, fresh beef juice from the rump steak. He condemned the position of the child as it sits on the chair, and said he had some success by having the child squat over a box of sand. He had never seen any good from massage. He never uses the soap suppository and seldom the injection.

DR. G. N. ACKER said he had good results from the use of olive oil, and also with massage when done twice a day. With breast-fed children he had found maltine to exert a good effect. Dr. Acker mentioned a case that was being fed on malted milk and was getting less than one-tenth per cent of fat; he gave it cow's milk and it became constipated; he then added sugar and the child became regular in its bowel movements. He also used the calcined magnesia with satisfaction. He disagreed with Dr. Adams as to the value of prepared beef juice. He used Valentine's with good results. He objected to suppositories and such agents.

DR. COOK said the giving of water is important and is often neglected. A child is frequently kept in a superheated apartment and perspires freely, which he thought wrong. He thought from Dr. Adams' remarks that he is more sanguine about these cases than the most of practitioners. He admitted the good of cream and olive oil; massage is good if done properly. The diet he thought the most important. He does not give many drugs.

Stated Meeting, April 6, 1900.

The President, S. S. ADAMS, M.D., in the Chair.

DR. J. WESLEY BOVÉE presented a specimen of

CANCER OF THE UTERUS

he had removed by a very extensive combined operation. The woman, about 38 years of age, had come to the hospital with a very large mass of cauliflower growth on the cervix that nearly filled the whole of the vagina and much distended the upper end of it. On the 15th of February he had prepared for this operation, but the woman took the anesthesia badly, her pulse becoming very feeble and thready, from the severe blood loss previous to admission. He therefore contented himself with scraping away the diseased tissue as well as he could and thoroughly cauterizing the surface with chloride of zinc. A few days later she suffered a slight infection of the adjacent structures, but continued to improve, and when the temperature remained permanently at the normal line she was in very good condition for the operation first intended, and which was done April 5—yesterday. The plan was nearly that of Werder, of Pittsburg, published in THE AMERICAN JOURNAL OF OBSTETRICS about three years ago. The abdominal incision was fairly long, to admit of freedom in the transperitoneal work. The ovarian arteries were first clamped at the wall of the pelvis, the broad and other ligaments severed as far as possible from the uterus, the ureters traced and separated, and the wide dissection carried down outside the vagina to the urethra in front and laterally and posteriorly to the same level. The tubes contained a muco-purulent fluid, and the right ovary was a cyst three inches in diameter and adherent. The intestine and bladder were adherent over the uterus, and both appendages were generally adherent. When the dissection had progressed to the extent mentioned, the loosened structures were pushed downward into the inverted vagina and the peritoneum closed over them. The abdominal incision was now closed and the patient placed in Simon's position for completion of the operation. This consisted in making a circular dissection through the vaginal wall at the level of the dissection from above, removal of the loosened structures, cleansing the vaginal wall as carefully as possible, and packing lightly the cavity below the peritoneal suturing. All suturing was done with catgut.

He said he had now done eight or nine of these cases in this manner, in one of which he was obliged to remove the lower portion of the ureter as it passed through a mass of cancerous tissue. All of them have recovered from the tedious operation, and all but one were now living. The one that died was one of cancer of the body of the uterus and had been repeatedly curetted in other cities during the past eight years for hemorrhage. He saw no cause for the hemorrhage, but advised hysterectomy on general principles, believing the disease

to be cancer. The specimen removed was examined microscopically by Dr. Carroll, who expressed the opinion the disease was eradicated. She, however, died about a year later of stomach trouble, and from the description given by her attending physician Dr. Bovée believed it was cancer of the stomach. In the case in which the ureter was amputated the stump was grafted into the bladder, and the woman is now, over two years later, weighing over two hundred pounds and in excellent health. A curious feature in that case was, the microscope failed to find any evidence of cancer in the ureter, but the mass about it was cancerous glands.

DR. J. T. JOHNSON complimented Dr. Bovée on getting out the cancer in so thorough a manner. He spoke of always having advocated the operation through the vagina. Dr. Bovée's operation is entirely in line of progress, though it seemed that almost too much of the vagina was removed. Dr. Bovée spoke of the tendency of these growths to recur where any portion rested on the vaginal wall, and, not knowing just where the infection begins, it is best to remove too much than not enough. The principle in this operation is to keep any of the diseased tissue from touching the fresh cut surface, and by this method the vaginal canal is not opened until it is ready to be amputated.

DR. J. WESLEY BOVÉE read the paper, entitled

COMPLETE LACERATION OF THE PERINEUM IN YOUNG GIRLS.¹

DR. J. T. JOHNSON said the convalescence is short in these cases because the accident happens to a healthy individual, and not, like the woman in pregnancy, subject to the influence of prolonged labor and septicemia. He had a case of a child 6 or 7 years of age who fell on the spigot in the bath tub. The bleeding was very profuse. He put in four or five stitches and had a good recovery. His dominant idea was to stop the bleeding, and he had not had an opportunity since to examine her for stricture. Dr. Johnson mentioned a case of a girl of 15 years, married, who, after the first sexual congress, bled very freely. He had no instruments with him to stop the bleeding from the artery, and used a patent clothespin successfully.

DR. WADE ATKINSON spoke of several little girls falling from the fence, and one on the corner of a trunk, which caused severe bleeding, but not enough to require stitches. He also spoke of a young lady who, sliding off a load of hay, sat upon her heel and ruptured her perineum.

DR. BOVÉE said he disagreed with Dr. Johnson as to the liability of these cases to infection; the wound is always made with a dirty instrument. In labor we use clean hands and instruments and do not expect sepsis. He thought we had a right to expect fever in these cases.

¹ See original article, p. 490.

TRANSACTIONS OF THE OBSTETRICAL SOCIETY OF LONDON.

Meeting of July 5, 1900.

The President, ALBAN DORAN, Esq., F.R.C.S., in the Chair.

DR. AMAND ROUTH read a paper on

PORRO-CESAREAN HYSTERECTOMY WITH RETROPERITONEAL
TREATMENT OF THE STUMP IN A CASE OF FIBROIDS OB-
STRUCTING LABOR; WITH REMARKS UPON THE
RELATIVE ADVANTAGES OF THE MODERN
PORRO OPERATION OVER THE SÄNGER-
CESAREAN IN MOST OTHER
CASES REQUIRING ABDOM-
INAL SECTION.

When the patient was first seen the pelvis was occupied by a large fibroid, and the cervix uteri was out of reach above the symphysis.

During the thirty-fourth week the pelvic fibroid was rather suddenly drawn up out of the true pelvis, and it was hoped parturition would be naturally performed.

As it was found that the head was arrested just above the lower segment of the uterus by two opposing fibroids, a Porro-Cesarean operation was performed, in preference to a pan-hysterectomy, or to Cesarean section with removal of the appendages.

The Operation.—When the abdomen was opened in the middle line the left broad ligament came into view, with the largest fibroid on its right. The incision into the uterus had therefore to be made posteriorly to the left broad ligament, and was directly over the placental site. The placenta was stripped off, the membranes incised, the child extracted, the placenta and membranes removed, and the uterus brought out through the abdominal incision. The operation was then completed by Baer's method.

Both mother and child had an uneventful recovery.

It is a point worthy of discussion whether supravaginal amputation of the uterus (Porro's operation) with retroperitoneal treatment of the stump is not safer for the patient in skilled hands than a Säger-Cesarean section with sterilization in all cases of *permanent* obstruction to labor requiring abdominal section, except perhaps those due to cancer of the supravaginal cervix.

When it has been decided that a viable child has to be

delivered from a living mother by abdominal section, all cases would resolve themselves into three groups.

1. Those where hysterectomy (Porro, or panhysterectomy) with retention of one or both ovaries is absolutely indicated.

2. Those where a Säger-Cesarean operation (with or without sterilization) is absolutely indicated.

3. Those capable of being treated by either operation.

It is agreed that a Porro (or panhysterectomy) is absolutely indicated in the following cases: obstructing fibroids; cicatricial stenosis of the vagina where the lochia cannot escape; septic endometritis; decomposed fetus (osteomalacia owing to the fact that removal of the appendages is often curative); uterine hemorrhage from uterine inertia during Cesarean section; after much previous manipulation of the uterus in attempts to extract per vaginam.

Säger-Cesarean section without sterilization is, on the other hand, absolutely indicated, instead of a Porro, where it is considered desirable for the woman to have a chance of another child; and Säger-Cesarean section with sterilization is required (?) in cases of cervical cancer when the supravaginal cervix is involved.

There only remains, therefore, a third group of cases where a Cesarean section with sterilization is usually done, but where it would, in my opinion, be quite as reasonable to do a modern Porro. This third group includes all cases of sufficient pelvic contraction, and it is in such cases that the relative value of a modern Porro operation as compared with a sterilizing Säger-Cesarean operation demands serious consideration.

DR. GALABIN preferred to call the operation performed by Dr. Routh a Baer-Cesarean, or simply a Cesarean hysterectomy, as the original operation of Porro was hysterectomy with the uterine stump fixed in the abdominal wound, instead of being covered by peritoneum and dropped into the abdomen as Dr. Routh has done. He thought the best operation had been done, and had performed a Porro operation in a similar case five years previously. He did not think pregnancy added to the difficulties of such a hysterectomy, and was led by this experience to recommend it as the best operation when fibroids obstructed labor, and also as an alternative to the ordinary Cesarean section apart from fibroid tumors. In several other cases of pelvic fibroids complicating pregnancy he had found that the fibroids became elevated during the first stage of labor and had enabled forceps to be used to complete delivery. He asked Dr. Routh whether there was much hemorrhage before the ovarian and uterine arteries were tied, and whether the elastic ligature was used.

DR. WILLIAM DUNCAN approved of the details of the operation performed by Dr. Routh. He believed that abdominal hysterectomy with intraperitoneal treatment of the stump was much less dangerous than any Cesarean section, except in cases of cancer of the cervix, where he would prefer to treat the stump extraperitoneally.

He preferred to leave both ovaries instead of only one, as he had several times noticed that when one ovary was removed various unpleasant "menopause" symptoms supervened, although never so severely as when both ovaries had been removed.

DR. PETER HORROCKS said he preferred to speak of Cesarean section rather than of Sänger-Cesarean, because the evolution of asepsis had led many operators to abandon Sänger's main improvement, which was to sew the peritoneum completely over the deep sutures.

Although he believed that Dr. Amand Routh had done quite the best thing in his case, he did not think it was possible to formulate rigid rules for all cases, for it often happened that it was found best to do something quite different from what was intended before the operation was begun. Speaking generally, he preferred Cesarean section to Porro, sterilizing the patient by snipping half an inch out of the middle of each Fallopian tube. This operation was, he considered, easier and safer for the patient. If possible he always left both ovaries when performing hysterectomy, although he had never found that climacteric atrophic changes ensued if only one were left behind.

DR. W. R. DAKIN believed that if one ovary were left behind after hysterectomy the effect was the same as if both were left. He agreed with Dr. Routh that the woman escapes certain risks if the uterus is removed instead of being merely sutured and the patient sterilized, and alluded especially to the risks of infection of the peritoneum through an imperfectly sutured wound, and of adhesions between the uterine and abdominal wounds which may cause strangulation of the bowels. If the woman wishes to have a family, all members of which are to be delivered through the abdominal wall, it is another matter. He had observed no greater shock after supravaginal hysterectomy in these cases than after an ordinary Cesarean section, but agreed that it was wise not to decide how the operation was to be finished till the child was actually extracted from the incised uterus. He had recently operated, with successful results to both mother and child, where the true conjugate was only two and three-quarter inches. In a previous pregnancy labor had to be induced at the sixth month. The patient agreed to an abdominal operation, but wished at the same time to be sterilized. At the operation, after extracting the child, he found the uterine vessels were standing out so clearly and were so easy to ligature that he decided it would be a much shorter procedure to remove the body of the uterus, treating the stump by the retroperitoneal method, than to suture the uterine wound and to ligature and excise a part of each tube. He thought this would be the decision most often arrived at under similar circumstances.

DR. HERBERT SPENCER agreed that the best operation had been done in this case, and he had himself performed Porro's operation under similar circumstances eight years ago. While

the intra-abdominal treatment of the stump shortened the convalescence and lessened the risk of hernia, it did not always prevent septic peritonitis by infection of the ligatures through the vagina (Klotz), nor the risk of adhesion of bowel to the seam, causing intestinal obstruction, which had occurred in one of his own cases. He did not consider that Porro's operation should be done in all cases of permanent obstruction, such as contracted pelvis. He much preferred the conservative Cesarean section. He would, however, have nothing to do with sterilization by tying or cutting the tubes, which, besides exposing the patient to additional risks, was very unreliable in its effects and was at least debatable from the moral standpoint.

The conservative Cesarean section was a very successful one and left no stump for intestines to adhere to, the wound in the puerperal uterus lying up against and becoming adherent to the abdominal wall, so that in a subsequent operation the peritoneal cavity was sometimes not opened at all. He had recently performed Cesarean section under local anesthesia upon a patient whom he had delivered by Cesarean section twice previously. As both the children previously thus delivered had subsequently died, the advantage to the mother of having a third, and this time a very healthy child, was obvious. He had also successfully repeated Cesarean section in another case.

DR. COLLINGWOOD ANDREWS had had opportunities of comparing the progress of cases of hysterectomy during pregnancy where both the extra- and intraperitoneal methods of treating the stump had been tried, and greatly preferred the latter method.

MR. A. C. BUTLER-SMYTHE thought that the operation performed by Dr. Routh was only possible in a hospital or where skilled assistance was obtainable. Wherever a Porro operation was required, as in cases of fibroids, he considered the retroperitoneal treatment of the stump far preferable to the old method, but he would leave the precise details of the operation to be decided when the abdomen was opened and the child extracted. That was also the time to consider whether the woman should be allowed to run the risk of another pregnancy.

MR. J. H. TARGETT said he considered that a non-sterilizing Cesarean section was very rarely justifiable, while between a supravaginal hysterectomy and a Cesarean section with sterilization the balance would usually be in favor of hysterectomy, because it could be more rapidly performed and prevented the risk of hemorrhage and subsequent sepsis. When the pregnancy was complicated with fibroids the advantages of supravaginal hysterectomy were obvious.

As evidence of an additional risk in the after-history of cases where Cesarean section without sterilization had been done, he showed the specimen of a uterus which he had removed from a woman who had had Cesarean section performed by him two years and a half previously for impacted shoulder

presentation. When readmitted she was in a state of collapse, and when the abdomen was opened the child and placenta were found free in the peritoneal cavity, and there was a large rupture in the anterior uterine wall along the scar of the previous operation. The patient fortunately recovered.

The PRESIDENT believed that the retroperitoneal operation was best, provided that, as in the present case, the obstetrician had already performed it more than once on non-pregnant subjects and in hospital practice with plenty of assistants. Country practitioners with large midwifery practices, but without experience in abdominal section, have, as in a case within his own knowledge, had excellent results after the old Porro-Cesarean operation, which was easy and could be done quickly. On that account Lepage performed the old operation in a hospital on a case of labor at term complicated by fibroids where there was free hemorrhage, saving mother and child. Weiss and Schuhl reported the removal of the uterus in two cases of spontaneous rupture during labor, occurring in a hospital. In one case the elastic ligature and pins were used, and the patient recovered; in the second, which was lost, the retroperitoneal operation was undertaken, but this case was septic. Panhysterectomy had the disadvantage of being yet lengthier than retroperitoneal hysterectomy.

In his reply DR. AMAND ROUTH agreed that the nomenclature was not altogether satisfactory, but thought that all cases of hysterectomy during late pregnancy (except panhysterectomy) were of the nature of a Porro, the treatment of the stump being a detail capable of many renderings. He did not consider that the old Porro operation was suitable for cases of advanced cancer of the cervix, owing to the great strain on the friable supravaginal cervix, which would almost certainly give way. He did not think it made any difference to the patient's after-history whether one or both ovaries were left. Most of the speakers had, with certain reservations, approved of his view that hysterectomy was in most cases preferable to Cesarean section with sterilization, and, as Mr. Doran stated, if haste was essential the old Porro was indicated, otherwise the modern retroperitoneal hysterectomy. Dr. Herbert Spencer's contention that, wherever possible, Cesarean section without sterilization should be performed, so as to allow another pregnancy to occur, was not in his opinion justifiable. The patient might at full term be far away from skilled assistance, and would, moreover, run all the risks mentioned in his paper, both during the puerperium and subsequently. The adhesions which Dr. Spencer stated occurred between the uterine and abdominal incisions constituted one of the dangers and involved the risk of intestinal obstruction. He preferred catgut to silk for suturing the muscle of the stump, owing to its quicker absorption, which therefore caused a smaller chance of subsequent infection. He had not found the elastic ligature necessary, but had quickly tied or clamped the uterine vessels.

The following specimens were shown: DR. G. F. BLACKER:

Frozen sections of an early (ten weeks) pregnant uterus. DR. PETER HORROCKS: A pregnant uterus with fibroids, removed at the fifth month by abdominal hysterectomy. MR. J. H. TARGETT: A pregnant uterus ruptured at full term through the scar of a previous Cesarean section, removed by abdominal hysterectomy. DR. AMAND ROUTH: A pregnant uterus with fibroids removed at full term by abdominal hysterectomy. DR. WILLIAM DUNCAN: Multiple myxomatous polypi from cervix uteri.

BRIEF OF CURRENT LITERATURE.

OBSTETRICS.

Uremia.—In a report of the Clinique Tarnier, M. Perret¹ describes a case of sudden death during the puerperium. The patient entered the clinic November 15, 1898. Pelvis generally contracted, rachitic. Labor began spontaneously at 10 P.M. November 15. On November 17 at 4 P.M. the cervix was dilated and medium forceps ineffectually applied. After symphyseotomy and forceps delivery the mother slept until 7 A.M. November 18, when she talked distinctly to several persons. At 8:05 A.M. she died suddenly. Autopsy showed all organs healthy except the kidneys, which were yellow and atrophied and "whose substance was partially destroyed."

Eclampsia.—J. C. S. Gauthier² declares himself a strong advocate of the use of *veratrum viride*, supplemented by hypodermatoclysis or enteroclysis, in cases of eclampsia. He states that the disagreeable effects of this drug disappear rapidly after the introduction of normal salt solution, preferably subcutaneously.

Two deaths from eclampsia at the Clinique Tarnier are reported by M. Perret.¹ In one the eclamptic seizures began at the end of pregnancy. Under anesthesia a still-born child was delivered by means of forceps. Death occurred ten hours later. Autopsy showed hemorrhages into the liver and congestion of the kidneys. In the other case the urine contained no albumin until the attack. After four convulsions, sudden cyanosis. Dilatation of the cervix, forceps delivery, sudden death. Autopsy showed a large hemorrhage into the fourth ventricle.

Indications for Interruption of Pregnancy on Account of Albuminuria.—F. Coudray³ advocates an absolute milk diet for eight or ten days. If at the expiration of this time the fetus is viable and the albumin exceeds two or three grammes, and if former labors have been abnormal, labor should be induced. If the fetus is not viable, the strict milk diet should be continued, watching the woman carefully. If the child is dead, labor should not be induced, as the albuminuria will gradually disappear.

Pyemia during Pregnancy.—To a mixed infection due to the gonococcus and staphylococcus Doléris¹ ascribes the death of a woman six months pregnant. He believes that the trouble began as a pyelonephritis by ascending infection of gonorrheal origin, although the genital organs showed nothing abnormal. Pericarditis, pleurisy, synovitis, arthritis, etc., rapidly followed, with premature labor. Postmortem bacteriological examination showed a diplococcus, apparently that of Neisser, and staphylococci.

Puerperal Infection.—N. Gheorghiu¹ reflects in his thesis the teachings of his instructor (Budin) regarding puerperal infection. He insists first upon the exclusion of other causes of fever accidentally complicating the puerperium, then upon the localization of the point of infection in the genital tract. If this is supposed to be in the uterus, this organ should be thoroughly explored internally, under chloroform if necessary. Two fingers in the uterus should remove all decidua, clots, etc. Intrauterine irrigation is then followed by swabbing out of the uterus, finally with creosoted glycerin, and a strip of iodoform gauze is inserted for drainage. The sharp curette may be required if the above measures fail, not otherwise, as it is dangerous, blind, and often inefficient. Hysterectomy is the final resort. General tonic treatment must never be forgotten.

Antistreptococcus Serum in Puerperal Septicemia.—T. Morton²⁶ got very good results from two injections of 10 cubic centimetres each in a moderately severe case of puerperal septicemia. He considers that the serum in this case saved the life of the patient.

Pulmonary Embolism.—M. Perret¹ records a death from pulmonary embolism while the woman was leaving the Clinique Tarnier on the tenth day after labor. Autopsy showed embolism of both pulmonary arteries. The puerperium had been normal.

Air Embolism.—An instance of this rare accident is reported by M. Perret.¹ The patient, primipara, 27 years old, had had several hemorrhages during pregnancy, cause unknown; no pain. During labor it was necessary to tampon the vagina on account of hemorrhage, which stopped only when the head was engaged. There was a sudden attack of cyanosis, dyspnea, irregular heart action, imperceptible pulse, and unconsciousness. After vigorous stimulation the patient regained consciousness and delivery was completed by forceps. Another attack of syncope followed and fresh hemorrhage. An adherent placenta required the introduction of the hands into the uterus several times. The uterus was tamponed. Dyspnea increased and death occurred. At the autopsy the uterine sinuses and the veins of the trunk, neck, and brain were found to contain large quantities of air.

Rupture of the Uterus.—A woman at term was seen by M. Perret¹ ten days after rupture of the membranes. There was a fetid discharge, and the fetal heart could not be heard. The cervix was digitally dilated and a podalic version per-

formed, resulting in rupture of the uterus from the insertion of the left tube to the pelvis. Death occurred ten minutes after the operation.

Walter V. Wood⁶ reports a case of spontaneous rupture of the uterus. Seventeen days after labor the patient began to have chills; these continued until the twenty-first day. An examination was made and a large, boggy uterus with a lacerated and gaping cervix found. The patient was placed under an anesthetic and a finger passed into the uterus, and a rent extending across the entire fundus found. Through the rent a loop of gut protruded; the gut was returned to the abdominal cavity. During the manipulation the patient lost a large amount of blood. One week later her temperature was normal and she made a good recovery. She is now pregnant.

Treatment of Placenta Previa.—J. B. de Lee⁶ says terminate the labor as soon as the diagnosis is made, except in exceptional cases where the patient can be continually under observation in a well-equipped hospital, where one may wait until the child is viable. When labor has begun and is going on with regular pains and the cervix dilating satisfactorily, one must wait. If the hemorrhage becomes free, puncture the membranes. If this does not stop the hemorrhage and the cervix is dilated, deliver at once with forceps. When the cervix is not fully dilated do either Braxton Hicks' version or intrauterine colpeuryesis. The child should be delivered slowly. If the cervix is only dilated a finger or less, one will have to use the tampon or bag to dilate the cervix. To stop the hemorrhage post partum, tampon the entire utero-vaginal tract, using sterile or borated gauze.

Treatment of Retention of Placenta.—S. Grosjean³ favors tamponing the uterus as the simplest and safest method of obtaining the expulsion of a retained placenta, unless one has had sufficient experience in digital curettage. By the means which he advocates Grosjean has succeeded in emptying the uterus in twelve of thirteen cases. It also arrested the hemorrhage which accompanied six of the cases. The placenta was expelled on an average at the end of fifteen hours. In four cases renewal of the tampon once or twice after twenty-four hours was necessary. In one of these the method failed entirely, although the packing was inserted four times.

Dermoid Cyst complicating Pregnancy.—Quénu⁷ reports a case of dermoid cyst which had been diagnosed before pregnancy, but which the patient would not consent to have operated upon until she was five and a half months pregnant. Although the operation was simple and there was apparently no uterine traumatism, abortion followed. Pinard⁷ again urges the removal of all ovarian cysts diagnosed during pregnancy. He does not favor puncture of such cysts.

Torsion of Pedicle of Ovarian Cyst during Pregnancy.—To the many cases heretofore reported of operations during pregnancy Pinard and Ségond⁷ add one of ovariectomy for torsion of the pedicle of an ovarian cyst at the end of the sec-

ond month. The removal of the tumor took place at the close of the third month and pregnancy continued. Hypodermatic injections of morphine were employed for several days after the operation.

Fibroid Tumors complicating Pregnancy.—Lewis S. McMurtry⁹ removed a uterus containing a five-months-old fetus on account of a large interstitial fibroid which had become impacted and obstructed the pelvis. The uterus and the fibroid made a mass about the size of an eight-months pregnant uterus.

Van Hassel¹⁰ gives a description of a case of uterine fibroid complicating pregnancy. The tumor was situated low down and displaced the uterus from the pelvis, and an early abortion seemed indicated. This was refused by the patient, who insisted upon carrying the child to term. Just before this time the writer opened the posterior cul-de-sac and attempted to remove the tumor. Profuse hemorrhage followed the first incision of the growth, necessitating packing. Severe bleeding recurred whenever this was removed. Labor began suddenly five days later. After ligation of the utero-ovarian arteries and application of an elastic ligature to the uterus, Cesarean section was performed. The uterus was covered with hard, whitish tumors, each covered with a venous plexus. One which was opened contained in its centre a venous varicosity. On account of hemorrhage the uterus was rapidly sutured. Six days after this operation death occurred. Van Hassel considers the tumors as telangiectatic fibromata.

Dystocia due to Size of Shoulders.—E. Bonnaire¹¹ advocates section of the clavicles in cases in which, after birth of the head, the size of the shoulders of a living child prevents their expulsion. He believes that when energetic measures have failed to deliver the shoulders, it is better to diminish the bisacromial diameter in this way than to continue traction, which will probably be fatal. The skin overlying the clavicle is divided by the first cut with scissors, and the bone is then severed by another. The writer has never known this to result in injury to the subclavian vessels or muscle.

Effect of Hysteropexy and Amputation of Cervix on Pregnancy and Labor.—In his thesis L. Thieux¹² states that the complications observed during pregnancy and labor in women who have undergone hysteropexy or amputation of the cervix are generally the direct consequence of the operation. Both of these usually have a favorable influence upon fecundation. Hysteropexy, by preventing the free expansion of the uterus, tends to endanger the continuance of pregnancy. Labor is slow on account of the anteversion of the uterus, the irregularity of the contractions, and sometimes of rigidity of the anterior lip of the cervix after vaginofixation. Amputation of the cervix favors abortion or premature labor, and the rigidity of the cervix may cause protracted labor. The many complications may endanger the life of both child

and mother. These operations should be performed upon young women only when absolutely indicated.

Aged Primiparæ.—Courgenon⁵ holds that the prognosis of labor in aged primiparæ is not necessarily serious if there is no other cause of dystocia.

Retention of Dead Fetus.—Mlle. Belly¹³ puts on record a case of death of the fetus, without known cause, at the fourth month, with retention in utero until term. There were no unfavorable symptoms during pregnancy, and no sepsis followed delivery. Mummification of the fetus and placenta had begun; membranes intact and thickened.

Medullary Narcosis during Labor.—S. Marx¹⁴ gives a preliminary report on 6 cases of medullary narcosis during labor. The lumbar punctures were done by Dr. W. B. Stone, the resident physician at the New York Maternity Hospital, Blackwell's Island, and all observations noted by him or his assistants. The patient's back, from the coccyx to the middle of the dorsal vertebræ, is thoroughly scrubbed with tincture of green soap and alcohol and ether. This is followed by a saturated solution of permanganate of potash, which is removed by a supersaturated oxalic acid solution. The entire area is then covered with sterile towels. A needle about 10 centimetres long is employed with a metal hypodermatic syringe, both of which are boiled ten minutes. The patient is placed on the side with arched back. The thumb of the left hand is placed on the spinous process of the fourth lumbar vertebra. The needle is inserted half an inch in front of and just outside the edge of the thumb at an angle of about 165°. The direction of the needle is from below upward and without inward. If the point strikes the lamina it is to be moved gently up or down until the space between the vertebræ is felt. The puncture may be made either between the third and fourth or fourth and fifth vertebræ. The point is then pushed slowly and gently downward until the spinal fluid is seen running out. Ten minims of a cocaine solution, representing one sixth of a grain, are now injected and the needle withdrawn. In four of the cases the child was born without the mother feeling it. In one case a cervix was dilated and the labor came on next day and was normal—the woman did not feel the dilatation. The remaining case was a failure, as the cocaine was inert. All of the cases complained of more or less tingling in the legs and headache. There was a rise of temperature in each case, which went down to normal in a few hours.

GYNECOLOGY AND ABDOMINAL SURGERY.

Fibroma of the Ovary.—L. Rocher¹⁵ records the removal of a fibroma of the ovary containing a few muscular fibres. There were no signs of peritonitis or tubal disease, yet the tumor had given the sensation of extreme tenderness. Rocher says that in cases in which there is doubt as to the organ in

which a pelvic tumor has developed, a comparison by the patient of the sensations elicited by bimanual pressure upon the sound ovary and upon the tumor is of value in determining the ovarian origin of the latter.

Jacobs¹⁰ reports the removal of a pure fibroma of the ovary from a woman 60 years of age. It was first discovered six months before, when about the size of a hen's egg, and rapidly increased to that of a child's head.

Incarcerated Ovary.—H. C. Wrinch²⁴ describes a case of inguinal hernia of six years' duration which began to cause vomiting and distressing pain about eighteen months ago. Sixteen months later it was operated upon and an incarcerated ovary found. Vomiting stopped immediately after the operation.

Exsection of the Ovaries in connection with Removal of the Tubes.—P. A. Harris²⁵ makes a plea for the more frequent avoidance of excision of the ovaries. He lays special stress upon the fact that the Fallopian tubes, when once infected by suppuration, so persistently harbor it that they constitute the natural habitats of pelvic suppuration. The ovaries should be regarded as the contiguous and apparently unwilling participants in these suppurations. He claims that in most cases good results can be obtained by removal of the tubes alone. He cites one case of pregnancy which occurred after removal of both tubes.

Migrated Ovarian and Parovarian Tumors.—G. M. Edebohls²⁶ tells of four cases of migrated tumors occurring in his own practice. In one case a gangrenous monocus, presenting all the characteristics of a migrated parovarian cyst, was removed by operation from the omentum. In another case a large, strangulated left parovarian cystoma was found free in the abdominal cavity, its pedicle having just been completely severed by torsion. The left ovarian ligament and left Fallopian tube were completely torn out of the uterus. An umbilical hernia existed in the same case. Parovariotomy and a radical herniotomy were performed, with recovery. In a third case were found a self-amputated ovarian cyst and tube and an ovarian intraligamentous cystoma of the opposite side. The patient was also troubled with chronic metritis and appendicitis. A celio-öphoro-salpingo-hysterectomy was performed, also inversion of the appendix. The case made a good recovery. A fourth case had a migrated dermoid of the right ovary, a left ovarian cystoma, and a greatly thickened free edge of the omentum. A bilateral ovariectomy, amputation of the omentum, and inversion of the appendix were performed. Cure.

Torsion of Pedicle of Ovarian Cyst.—Another instance of this accident is described by L. Monnier.²⁷ Three months before the patient, a girl of 16, had had a first attack of abdominal pain with an eruption resembling that of measles. The second attack began suddenly and was accompanied by symptoms of peritonitis. An ovarian cyst with twisted pedicle

and nearly gangrenous was removed by laparotomy. Recovery.

E. Ozenne²⁸ reports a case of torsion of the pedicle of an ovarian cyst, with recovery following ovariectomy. The chief point of interest was the situation of the pain accompanying the torsion in the lumbar region. This, with the absence of tenderness of the pelvic tumor, led to an incorrect diagnosis of renal colic upon the first examination.

Torsion of the Fallopian Tube.—Pozzi¹⁵ puts on record several such cases. In one, torsion of the pedicle of a pyosalpinx of the right side occurred on December 27. On January 1 the tumor was removed, and on the 12th similar symptoms led to a laparotomy on the 14th. This disclosed a torsion of a pyosalpinx and ovary of the left side. In another case a tumor felt on the left of and in front of the uterus proved to be the right tube containing a three- or four-months fetus. It had undergone one complete turn in front of the uterus.

Baudron¹⁶ describes a laparotomy which revealed a ruptured tubal pregnancy on the left side and a hydrosalpinx on the right, whose pedicle showed two complete revolutions in the opposite direction to that of the hands of a watch.

Sarcoma Deciduo-cellulare.—W. J. Smyly²⁹ reports a case of this disease. The woman was delivered of a hydatidiform mole; this was followed by repeated hemorrhages, some being very severe. The uterus was curetted after the removal of the mole and again later. The patient later got up a putrid discharge with fever. There were metastases formed and enlargement of the uterus. Anemia was marked and rapidly progressed. She complained of intense pelvic pain and vesical irritation. The base of the right lung became solid, with much cough and dyspnea. An empyema formed on the same side, from which a quantity of stinking pus was subsequently evacuated. The septic fever continued for two months, when she died. The diagnosis was confirmed by sections made from the pieces gotten at the time of the curetting.

Acute Senile Endometritis.—L. H. Dunning²⁵ presents the following summary of two cases of acute senile endometritis upon which he operated: In both uteri was an acute inflammatory process. The endometrium was thickened and its surface devoid of its epithelial layer. There was an increase of blood vessels, a small round-cell infiltration, and a diminution in the glandular elements. The coats of the arteries of the muscular layer were degenerated. There was no connective tissue found. The inflammation was more marked in the body of the uterus, the mucosa being chiefly involved. The small round-cell infiltration extended to the upper muscular layer. In both cases one appendage was involved; from this fact he believes the inflammation is prone to extend.

Chloride of Zinc for Catarrhal Endometritis.—Dorff¹⁷ ardently advocates the treatment of endometritis by cauterization of the uterine and cervical cavities with fifty per cent solution of zinc chloride. The application is made by a sound

wrapped with cotton, the vagina being protected by a speculum and tampons. The sound is left in place for one minute. Painful uterine contractions may follow the first cauterizations, and the first menstruation is often profuse and occurs early. The cauterizations are repeated every eighth day, except during the period from five days before menstruation to five days after. Six to twelve applications usually effect a cure. The solution of zinc chloride cauterizes, during the brief application, only the superficial layers of the uterine and cervical mucosa; stenosis never follows.

Hemorrhagic or Hydro-hemorrhagic Endometritis of First Six Months of Pregnancy—O. Lemaire³ states that the hydro-hemorrhagic or hemorrhagic discharges of the first months of pregnancy are due to decidual endometritis. They are usually preceded by hydrorrhea; more rarely the hemorrhagic character exists from the first. The only other symptoms are some pain and a feeling of weight in the lower part of the abdomen. Severe anemia may result. The prognosis for the mother may become serious; for the fetus it is always so. The indications for treatment include absolute rest, relief of uterine congestion, increasing plasticity of the blood, restoration of the volume of the blood by hypodermatoclysis.

Uterine Sclerosis.—Richelot³⁰ considers sclerosis of the uterus a pathological entity differing from metritis which arises from infection. The former may occur in virgins and in women who have had no puerperal affection. The uterus in this lesion is enlarged and very hard; the cervix large and eroded; the endometrium hypertrophied. The condition gives rise to neuralgic pains. It occurs most often in neurotic and arthritic persons, and this argues against the usefulness of local treatment.

Uterine Fibroids.—E. Ozenne³¹ believes that it is exceptional that uterine fibroids exist without causing at some time accidents of some importance. For this reason he advises their removal in all cases, especially if the woman is young and the tumor increases even slowly in size. He holds that it is more dangerous in general to temporize with medical measures than to operate. Isch-Wall³¹ lays down the rule that every fibroma which does not diminish after three months of treatment should be removed.

J. P. Rnyan³² believes in the extraperitoneal method of dealing with fibroids of the uterus. His reasons for his belief are that it is simple of execution; there is less danger of sepsis and secondary hemorrhage; that there is less shock.

G. Bernard³³ holds that, uterine fibromata being essentially benign growths, operative measures are indicated only in case of hemorrhage or sloughing or when there are severe pains due to incarceration of a subperitoneal tumor in the pelvis or to inflammatory lesions of the appendages. A large tumor may justly be removed in many cases at the desire of the patient. If the tumor complicates pregnancy, Bernard urges waiting until term, and then, if the obstacle seems insur-

mountable, performing a Cesarean section or hysterectomy. In operating for subperitoneal fibroids the writer advocates enucleation of the tumor whenever this is possible.

Tuffier³⁴ reports the successful removal of seven small uterine fibroids by myomectomy. No general anesthetic was employed, but cocaine was injected into the subarachnoid space in the lumbar region.

H. J. Boldt,³⁵ in two instances of tumors causing profuse menorrhagia and metrorrhagia in patients who declined radical operation, has cured the bleeding by the use of the galvano-cautery. The cervix was thoroughly dilated and the dome-shaped electrode of Byrne was rapidly carried through the canal. The interior was thoroughly charred, as in malignant disease, but the process was not carried to such depth.

After considering other methods of treatment, S. Duplay³⁷ discusses the indications for radical operations. He says that even in the absence of functional troubles, especially in young women, it is necessary to operate upon cases in which the tumor constantly enlarges; and this intervention should not be postponed until the size of the tumor is excessive, as this increases the danger of the operation. Functional troubles may be severe enough to demand surgical treatment; medical treatment usually simply defers it. Symptoms of compression, sepsis, and torsion of the pedicle require immediate operation. Duplay limits vaginal hysterectomy to cases of tumor not larger than the fist and without complications and adhesions; for all others he prefers abdominal hysterectomy, and this he believes should always be total.

Fibroid causing Inversion of the Uterus.—G. E. Herman³⁶ describes a case in which a submucous polypoid fibroid caused inversion of the uterus. In making a differential diagnosis between inversion of the uterus and a polypus protruding through the cervix, there are three methods: the bimanual examination, in which the uterus can be felt in its normal position in the case of a polypus; another method is to pull down the cervix and pass a finger, per rectum, above the cervix uteri, so as to feel if the body is continuous with the cervix; the last method is by passing the sound. Herman also describes a case of a pelvic dermoid originating in the cellular tissue. He removed this tumor by torsion in sections on three different occasions. The patient made a good recovery. He had already done an abdominal section and removed an ovarian dermoid and examined the other ovary, which he found normal.

Hysterectomy for Myoma.—E. W. Cushing¹⁶ believes it is better to leave the cervix than to do a total hysterectomy. His reasons for his belief are: 1. Because it makes the operation shorter and easier, and gives less chance of hemorrhage during the operation, and does not open so much cellular tissue for oozing and decomposition of blood after the operation. 2. Because there is less chance of infection where only the small cervical canal is cut across and instantly closed by

the double tenaculum than when the whole vault of the vagina is opened. 3. Because the vaginal portion of the cervix is a seat of sexual feeling and worth preserving on that account, and if the cervix is present the women do not feel so much mutilated as when it is gone. 4. Because parts of the broad ligament with the cervix form a better support to the pelvic contents. Total hysterectomy should be performed: (1) When the cervix is enlarged and diseased, (2) when the cervical canal is suppurating or septic, (3) when there is any suspicion of malignant disease, and (4) when vaginal drainage appears desirable.

Myomectomy per Vaginam.—J. R. Goffe³⁸ states that the vaginal method is superior to the abdominal method because it has less danger; convalescence is smoother and simpler; the patient is relieved of the annoyance of stitches, adhesive plaster, bandages, and dressings; there is no visible scar; and, above all, there is no danger of hernia. Experience and facility of operation can alone determine the upper limit to the size of the fibroid which can be removed by the vagina. After the incisions are made, opportunity is afforded to decide whether a myomectomy or a hysterectomy is indicated; if the latter, all the steps already taken are essential to the procedure and no time is lost.

Arrhythmia Cordis complicating Fibromata Uteri.—J. W. Borée³⁹ cites a case of fibroids of the uterus complicated by arrhythmia cordis. He performed abdominal hysterectomy successfully. The arrhythmia cordis was unaffected by the operation.

Cyst of the Abdominal Wall.—L. J. Hammond⁴⁰ cites a case in which there occurred a fibrocyst in the abdominal wall. The cyst was the size of a cocoanut and had the appearance of a broad-ligament cyst.

Pyosalpinx.—Jacobs⁴⁰ has operated upon a case of double pyosalpinx in a virgin 49 years of age. The hymen prevented vaginal examination. The tubes were surrounded by old adhesions and their contents were thick pus, cultures from which were sterile. There had never been any particular symptoms referable to the tubes, and no cause of the lesion was known.

Hydrosalpinx.—Rouffart⁴⁰ makes the report of an operation for double pyosalpinx the basis of a plea for the conservation of the healthy ovary whenever possible. In this instance, after removal of both tubes and a diseased ovary, he enclosed the stumps of the tubes in the broad ligament through incisions in the latter, in order to avoid all possibility of spermatozoa passing through the stumps to the ovaries and causing an abdominal pregnancy.

Pyometra in a Virgin.—J. Godart⁴⁰ places on record a case of pyometra in a virgin due to congenital atresia of the cervix. Menstrual flow had never occurred, but pain in the lower part of the abdomen at each period, with a gradually increasing abdominal tumor which had reached the size of a

five-months pregnancy and became infected. Cultures showed the bacillus coli. The purulent collection was drained through an opening made by the finger from the vagina.

Angiotribe in Abdominal Surgery.—H. M. Taylor³⁸ advocates the use of the angiotribe in abdominal surgery. He believes it to be perfectly safe in selected cases.

Suture by Layers and the Through-and-through Suture.—Maurice H. Richardson⁴¹ gives the chief advantages of the through-and-through suture as (1) obliteration of dead spaces and (2) rapidity and simplicity. The chief advantage of the layer suture is prolonged approximation with non-absorbable material. He combines the two methods by first placing the through-and-through and then the layer.

Diachylon as an Abortifacient.—W. B. Ransom⁴⁰ reports 4 cases in which diachylon was taken to end a pregnancy; 3 of the cases aborted, the other going on to term. All four suffered from lead poisoning.

Genital Malformations.—J. M. Fisher⁴¹ reports 2 cases of malformation. One was a case of retrohymeneal atresia occurring in a woman 17 years old, the menstrual blood having been retained since menstruation started; there was a hematocolpos and hematometra. The atresia was relieved and the retained blood removed. The other case was one of a double vagina and a uterus with a septum. The septa were removed from both the vagina and uterus. The recovery was good.

Congenital Malformations.—O. Macé⁴² describes a case of congenital obliteration of the esophagus at the level of the first and second rings of the trachea. The upper end of the lower segment of the esophagus also opened into the trachea.

Another case of malformation is reported by Schwaab, Macé, and Bouchacourt.⁴² The monster presented by the breech; there was retraction of Bandl's ring with posterior rotation of the head, application of forceps to which was followed by delivery of a dead fetus. The lower extremities were represented by a single appendage containing one femur which articulated below with one tibia, this extremity terminating in a point. There was no foot. The knee flexed posteriorly. There were no external genitals; the internal were very imperfect. Neither kidney possessed a pelvis nor ureter, and the bladder was absent. There was an anus, but the large intestine terminated in a cul-de-sac. The nasal fossæ did not communicate with the pharynx, which was closed off by continuation of the mucous membrane from the palatine vault to the pharynx.

Congenital Umbilical Hernia.—P. Audion⁴³ reports a case of congenital umbilical hernia containing a portion of the liver, which was successfully operated upon by Porak one hour after birth.

Supernumerary Openings in the Fallopian Tubes.—Agnes C. Victor⁴⁴ describes a tube having several ostia. The tube was 6 centimetres long. Five millimetres internal to the fimbriated extremity was a second ostium which communicated

with the tubal canal. About four millimetres internal to this ostium was a small tuft of fimbriæ. Just internal to this was a blind pouch, and a little internal to this was a solid projection surmounted by fimbriæ.

Obliteration of the Duodenum.—O. Macé⁴³ has examined the body of a child which died three days after birth. The mother had showed hydramnion, eight litres. The autopsy demonstrated a complete obliteration of the duodenum at the junction of the first and second portions. The intestine terminated above and below in culs-de-sac which were entirely unconnected.

Spina Bifida.—Gosset¹⁶ records an operation for spina bifida of the sacral region. The tumor, which was the size of a mandarin, was sessile and formed of very thin meninges. Ten days after the operation there were incontinence of urine and feces, but the results were otherwise favorable.

Meningocele.—Kirmisson¹⁸ records a successful operation upon a meningocele the size of a mandarin in a child 6 weeks old. The sac was dissected out, and two months later the child's condition was good in every respect.

Hernia of Rudimentary Uterus.—Rouffart⁴⁸ presents the history of a case of inguinal hernia in a woman 22 years of age who presented all the external appearances of her sex. At the operation the sac was found to contain a rudimentary uterus and an ovary. Only the left half of the uterus and left tube and ovary had developed. The cervix was represented by a muscular and fibrous band. The presence of the hymen is regarded by Rouffart as supporting the view that this structure is formed from the vulva, not from the vagina.

Tubercular Peritonitis.—J. Godart⁴⁹ believes that the results of laparotomy for tubercular peritonitis have been overestimated. He reports four cases in support of this view. In the first a marked improvement for ten days was followed by fever, severe diarrhea, violent pain, and death sixteen days after operation. In the second there was improvement, and the abdominal wound was apparently healed when the patient left the clinic forty days after operation. Soon after this the entire lower half of the cicatrix broke down, and through it urine and fecal matter discharged. Death occurred two and one-half months after the operation from the tubercular infection of the operative wound. In the third case temporary improvement was succeeded by return of the ascites, pain, and vomiting, with death eight months after operative interference. The fourth case was a tubercular peritonitis coming on soon after a laparotomy for ovaritis and salpingitis of one side. Operation was absolutely unsuccessful, death occurring on the seventh day.

Primary Carcinoma of the Appendix.—Elizabeth Hurdon⁵⁰ reports two cases operated upon by Dr. H. Kelly. One was a primary carcinoma of the appendix vermiformis, the other that of a secondary carcinoma of the appendix following a carcinoma of the ovary.

Tubercular Meningitis following Operation for Ectopic Gestation.—Jacobs¹⁰ noticed, while operating for ruptured tubal pregnancy, that the appendages, uterus, and parietal and visceral peritoneum were covered with small tubercles. The next morning symptoms of tubercular meningitis developed and death occurred thirty-six hours after the operation. The question is raised whether this complication was due to a bacterial embolism or to the aggravation of a latent meningitis.

REFERENCES.

¹ L'Obst., May. ² La Rev. méd., May 16. ³ Thesis, Paris, 1900. ⁴ Soc. d'Obst., de Gyn. et de Ped. de Paris, June. ⁵ Am. Gyn. and Obst. Jour., Aug. ⁶ Clin. Rev., Aug. ⁷ Soc. d'Obst., de Gyn. et de Ped. de Paris, May 5. ⁸ Soc. d'Obst., de Gyn. et de Ped. de Paris, March 2. ⁹ N. Y. Med. Jour., Sept 1. ¹⁰ Bull. de la Soc. Belge de Gyn. et d'Obst., No. 3. ¹¹ Presse Méd., March 14. ¹² Thesis, Montpellier, 1900. ¹³ Rev. mens. de Soc. de Gyn., d'Obst. et Ped. de Bordeaux, June. ¹⁴ Med. News, Aug. 25. ¹⁵ Soc. d'Obst., de Gyn. et de Ped. de Paris, Apr. 6. ¹⁶ Bost. Med. and Surg. Jour., Aug. 25. ¹⁷ Rev. mens. de Soc. de Gyn., d'Obst. et de Ped. de Bordeaux, Apr. ¹⁸ Med. Rec., Sept 8. ¹⁹ L'Obst., Mar. ²⁰ Ann. of Gyn. and Ped., Sept. ²¹ Ann. de Gyn., May. ²² Soc. d'Obst. de Paris, May 17. ²³ Lancet, Aug. 25. ²⁴ Can. Lan., Aug. ²⁵ Ann. Gyn. and Ped., Aug. ²⁶ Med. Rec., Aug. 18. ²⁷ Jour. de Méd. de Paris, June 3. ²⁸ Jour. de Méd. de Paris, July 8. ²⁹ Br. Gyn. Jour., Aug. ³⁰ Ann. de Gyn. et d'Obst., May. ³¹ Jour. de Méd. de Paris, July 1. ³² Memph. Med. Month., Aug. ³³ Jour. de Méd. de Paris, May 27. ³⁴ Soc. de Chir. de Paris, June 13. ³⁵ Jour. A. M. A., Aug. 4. ³⁶ Clin. Jour., Aug. 22. ³⁷ Presse Méd., June 13. ³⁸ Am. Gyn. and Obst. Jour., Aug. ³⁹ Med. News, Aug. 4. ⁴⁰ Brit. Med. Jour., June 30. ⁴¹ Am. Gyn. Jour., July. ⁴² Soc. d'Obst. de Paris, Feb. 15. ⁴³ Soc. d'Obst. de Paris, Dec. 21. ⁴⁴ Bost. Med. and Surg. Jour., May 17. ⁴⁵ Med. Rec., June 30. ⁴⁶ Lancet, July 7. ⁴⁷ Thesis, Montpellier, 1899. ⁴⁸ Bull. de la Soc. Belge de Gyn. et d'Obst., No. 4. ⁴⁹ La Polyclinic, Apr. 1. ⁵⁰ Ann. Gyn. and Ped., Sept. ⁵¹ Br. Gyn. Jour., Aug. 1. ⁵² Med. Sent., Aug. ⁵³ La Progrès méd., May 5. ⁵⁴ Phil. Med. Jour., Aug. 25. ⁵⁵ J. H. H. Bul., July. ⁵⁶ Brit. Med. Jour., Sept. 1.

DISEASES OF CHILDREN.

Acute Dilatation of the Heart in Influenza of Children.—F. Forchheimer¹ says that the clinical picture produced by acute dilatation of the heart in influenza has been known to nearly all the authors who have written upon the subject of influenza during the last twenty years. There are two varieties, a mild and a grave form. The author mentions the views held in regard to the etiology, but thinks it reasonable to suppose, with Sansom, that there is some affection of the bulb affecting both the respiratory and the cardiac accelerating centres. The source of the irritation would be a toxin, hypothetical as far as the influenza bacillus is concerned, but positive as to some of the pus producers which habitually accompany influenza. It would be fully in accord with the nervous origin of these symptoms that we find broadening of the heart's dulness. The production of acute dilatation of the heart as a result of disturbance in innervation has been conclusively proved in many diseases. As to the grave forms, the author has made observations upon 4 cases, which he does not consider sufficient to justify a definitive opinion, although

in all of them the direct cause of the trouble seemed to be heart strain, in 2 of them there being a predisposing weakness of the myocardium. It is possible that in these 2 cases a myocarditis was going on at the same time, although the short duration of the attack in one case and the complete *restitutio ad integrum* in all of them seem to preclude this. According to the author's observations, we are justified in assuming two forms of heart dilatation in influenza: one presumably produced by the action of the toxin upon the nervous system of the heart and possibly upon the myocardium, the second form occurring in conditions in which outflow of the blood is materially interfered with on account of mechanical obstruction. The first form undoubtedly may end fatally, although this has not been the case in the writer's experience. The second form lasts much longer than the first, but in children has a tendency to recovery.

Artificial Feeding of Infants.—Heubner² calls attention to the fact that the scientific basis for the artificial feeding of infants can be obtained only by the study of fully developed and healthy, not sick, children. The normal infant's intestine is able to digest the separate ingredients of cow's milk quite as well as those of mother's milk, but the amount of work required is greater in the case of cow's milk and more residue is left. It is possible for the child to obtain all its necessary supply of energy from cow's milk, provided only that this is given in proportions equivalent to those of human milk at the same period of the infant's development. The difficulties of artificial feeding lie, on the one hand, in the regulation of the proper dosage of the food, and, on the other hand, in the danger of its contamination and decomposition. Bacteriological cleanliness can be obtained by five to ten minutes' boiling or by heating the milk to 65° C. for twenty-five minutes. The conditions present in the diseased infant vary greatly from those of the healthy child, and the composition of the food must be adapted accordingly. It is the fat more than the proteids which causes the greatest difficulty. By means of dilution, the addition of milk sugar or the substitution of other carbohydrates, peptonization, or the preparation of cream or fat mixtures, artificial feeding can be regulated so as to restore sick infants to the normal state in most cases. When all other methods fail, the child must be put to the breast again. For, after all, breast milk exceeds all artificial foods in efficiency.

Cerebral Abscess.—J. Henry Fruitnight³ reports a case of fatal cerebral abscess with amnesic aphasia in a girl of 12 years, who in 1898 suffered from an acute otalgia of the left ear. It was diagnosed as otitis media with abscess, and paracentesis of the left ear let out a large amount of pus. For eighteen months the child had more or less discharge from the ear, and when the author first saw her she had frontal headache, some prostration, occasional chilly sensations and nausea, and a scanty discharge; pulse 98, temperature 100°. The clinical diagnosis was deep mastoid caries; operation was

refused. Seven days later she was seized with violent convulsions. Dr. Knapp made ophthalmic and otoscopic examinations. Besides other conditions there was optical amnesic aphasia. A clinical diagnosis was made of deep mastoid and epitympanic caries, epidural and cerebral abscess, with beginning meningitis, and operation performed as a last resort; the mastoid was opened, as well as the posterior cranial fossa, but no abnormality was found in the latter. The upper wall of the attic, which was carious, was removed. The patient made some improvement, but on the sixth day there were symptoms of brain abscess, and before operation could be performed the child died. At the autopsy a large abscess cavity was found, situated temporally from the lateral ventricle, surrounded by a dense white capsule which was ruptured in front and toward the lateral sinus behind. This case proves the statement that the optical memory centre is in the temporo-sphenoidal lobe, but does not show its exact location, because the softened area was too extensive. The case also illustrates how sometimes the extent and gravity of a pathological lesion is not reflected in the clinical history of the case. It teaches that an otitis or an otorrhea neglected or intermittently treated at the outset does sometimes terminate fatally. (The mother neglected treatment of the discharge, considering it to be only a "running ear," of no importance.) It emphasizes the fact that a portion of the laity does not yet realize the gravity of this affection, and it behooves us to continue our efforts in educating them in its possible dangerous complications. Reasoning from the symptoms and course of the disease in the last month of the patient's life, the writer thinks that we are justified in saying that the exacerbation of the trouble leading to the death of the patient was the result of the extension of the abscess beyond the boundaries of its capsule. Increasing inflammation produced the symptoms present in the meningitis and in the cerebral abscess, including the severe convulsions. At this time the perforation in the anterior part of the capsule took place, permitting part of the abscess contents to flow into the surrounding brain tissue, and later the secondary perforation into the ventricles caused the sudden death.

Dangerous Communicable Diseases, how Spread, together with Some Suggestions as to their Restriction.—M. K. Allen⁴ says that people should be educated, through health officials and practitioners of medicine, as to the chief sources of danger in contracting contagious diseases. 1. They should be made to know that the dust from infected handkerchiefs, when the secretion has dried, often contains disease germs and should be looked upon suspiciously. They should be taught that handkerchiefs should under no circumstances be used after any secretion from the nose has been permitted to dry upon them, and that after being used they should be placed in a paper bag, the top twisted shut, and there remain until they can be boiled in water. 2. Contagion is liable to be spread by dust from floors or articles upon which infected sputum or

saliva has been ejected. 3. Contagion is liable to be spread by contact with the hands of persons who cough or spit into handkerchiefs and then handle the infected material. 4. Clothing may often contain the germs of a communicable disease. 5. Books, pencils, chewing-gum, drinking cups, etc., which are used in common, are often sources for the spread of contagious diseases. 6. While typhoid fever is ordinarily caused through the medium of drinking water which has been contaminated with sewage or with leakings from privies, it is not improbable that the disease is sometimes spread by means of dust containing the germs of the disease.

Consumption is a communicable disease. It is well known that this disease is spread by the dust of dried sputa and also by milk and meat of tuberculous animals. Out of every 7 persons born, 1 dies from some form of tuberculosis; of all the children that die under 10 years of age, one-third die of tuberculosis; out of the 63,000,000 of people living to day in the United States, 9,000,000 or more will die of tuberculosis, at the rate the disease is now prevailing. Pneumonia is spread by a germ which is found in the sputum of those who have the disease. Influenza is spread by a germ which finds its way from infected handkerchiefs and other articles into the throat, nose, and air passages of persons susceptible to this disease. Isolation and disinfection should be adopted for its restriction. They should be rigidly enforced in cases of diphtheria. Typhoid and typho-malarial fevers call for disinfection of stools and clothing. Scarlet fever, measles, and whooping cough call for isolation and disinfection. As for small pox, statistics prove beyond a doubt the value of vaccination and re vaccination, which should be practised at least once in every five years. The Health Department and attending physicians should be in closer touch. Too many physicians "assume the responsibility" on the notification report, and neglect to discharge the responsibility in practice. They are too indulgent as to visitors into infected rooms and premises; too many children who are still in the communicable stage of disease, especially of scarlet fever, are permitted to mingle with others; not enough warning is given in all cases, and especially is disinfection under the direction of the physician not thorough and efficient.

De Musset's Symptom.—Armand Delpeuch^{*} calls attention to a symptom which he considers to be a sure indication of aortic trouble. It consists of rhythmical oscillations of the head, synchronous with the arterial pulsations. It is undoubtedly the direct result of arterial pulsations of greater volume and brusqueness than occur under normal conditions, the head jerks merely indicating the violent impulse given to the blood current as it enters into the aorta and the carotids. Alfred de Musset was the first in whom this symptom was noticed and recorded, hence the nomenclature.

Hip-joint Disease, Destructive, After-history of Forty-one Cases Treated by Operation for.—Arthur E. Bar-

ker⁶ gives the history, so far as obtainable, of the ultimate results of 41 cases operated on for chronic tuberculous disease. In the course of twenty-two years there have been 3 deaths in the series. Cases *not* traced after leaving hospital, 11; of these, sound union on leaving is noted in 2; unhealed, doubtful note, or "nearly healed," 9; died seventeen months after operation, 1; died five years after operation, 1; and died one year after operation, 1. Cases *traced* after leaving hospital: for over twelve years, 1; over nine years, 3; over eight years, 2; over seven years, 1; over five years, 3; over four years, 1; over three years, 4; over one year, 2; long after, 9; total, 26. Of those traced for years after leaving hospital, there had been no recurrence after operation, up to the time they were lost sight of, in 14. Some recurrence was noted in 10 cases after some years, 2 after many months. But all of these 26 were in good health and walking about when last seen. As to the functions of the limbs operated on, as seen (in all cases but 2) years after, they were excellent. The patients walked well and without pain. There was, of course, shortening, but this is not escaped by those who have healed up without operation and even without any obvious abscess. All of the patients in the author's list suffered from softening and abscess in their hip joints, and this matter had to be let out on all the ordinary rules of surgery, and at the same time any diseased bone present was removed by the most conservative methods known. The routine treatment since the year 1888 has been as follows: A two-and-a-half-inch interior incision (Parker) into the abscess in the joint; flushing out of the latter with hot sterile water; remains of head and sequestra removed with flushing gouge, aided in a few cases by lock-saw; acetabulum gouged clean, even into pelvic abscesses in some cases; all the operation cavity scraped and flushed clean with sterile water and then dried; a small quantity of iodoform emulsion is then poured in and any excess squeezed out; careful suture of superficial wound without drainage. By this method 26 cases were treated, and 2 more with the addition of drain tubes for a time. Of the latter, one was the case fatal after eighteen months from marasmus, the wound never having quite closed. The other left hospital with an open wound. In the 26 in which the wound was at once closed without drainage, 14 remained soundly closed for more than one or several years. The 12 remaining required subsequent treatment of one kind or another for recurrent nodule or simple sinus.

Infantile Spinal Paralysis, Relations of, to Spinal Diseases of Later Life.—William Hirsch⁷ writes that various theories have been offered as to the nosological relation between the early infantile paralysis and the later disease. According to some authors, irritation of the cord enfeebled this organ and made it a *locus minoris resistentia*, which on any occasion might become susceptible to further disease. Charcot expressed the opinion that there existed in some individuals a certain disposition, a kind of vulnerability of the ganglionic

cells of the anterior horns, which at some period of life might give rise to an acute poliomyelitis anterior, and at another to a progressive muscular atrophy. A third view was that the old scar which was produced by the inflammatory process in the gray matter of the anterior horns formed a latent but permanent inflammatory focus, which at any time might light up afresh and cause a new set of symptoms. Recent anatomical investigations of fresh cases of infantile spinal paralysis, as well as the generally accepted theory of its infectious nature, have put it beyond doubt that we have to deal, not with a systemic disease, but with an interstitial inflammatory process. As far as spinal diseases of later life are concerned, we must admit that in many cases it is not only extremely difficult but sometimes quite impossible to distinguish between a systemic or neuron disease and a myelitis merely from the clinical symptoms. The author is inclined to believe that quite a number of cases reported as having developed from an infantile spinal paralysis to a progressive muscular atrophy would prove, after microscopical examination, to be instances of myelitis instead of primary neuron disease. The question arises as to whether a man's infantile paralysis has any relation to his later disease, and, if so, of what nature is this relation? Most theories are based on the theory that poliomyelitis anterior is a systemic disease, and could not therefore be applied to such a case. The third theory mentioned, however, would correspond to the clinical and anatomical conditions of such a case; that is, that the old scar which was produced by the inflammatory process in the gray matter of the anterior horns formed a latent but permanent inflammatory focus which at any time might light up afresh and cause a new set of symptoms. Whether the old scar contained the poison to set up the new disease, or whether we have to deal with a new infection which attacked the old scar first, is of course a question which cannot be decided with absolute certainty.

Insanity of Adolescence.—Bourneville and Bellin^{*} report in detail the case of a young girl of 14 years. The heredity was very unfavorable. The father and the maternal grandfather and grandmother were of violent disposition and alcoholic. There were insanity and neuroses of various kinds in the family. The patient was in all probability conceived during the father's drunkenness, the mother being subject to hysteria. The child suffered from convulsions only once; she had incontinence of urine up to the age of 12, since then attacks of lipothymia, and laughter and tears in succession without apparent reason. Her mother having been placed in an insane asylum, she was sent to a religious orphan asylum, where she became subject to *mystic delirium*, with illusions, hallucinations of vision, melancholy, etc. This mystic delirium necessitated her return to Paris and her admission to the hospital. It continued for several days in this place, and was then replaced by *maniacal excitement*, with shrieking, singing, incoherence, meaningless movements, gâtism, and insom-

nia. Obscenity took the place of shrinking modesty. This condition lasted a week, and, after a remission of three weeks, was followed by a period of melancholia, less severe than the first and unattended by mysticism or hallucinations. It disappeared in eight days. From that time on the patient had no further mental trouble. Her health became stronger. Growth and puberty developed normally. Weight and height increased. There was no sign of hysteria. Treatment consisted in baths and douches, with the administration of chloral and bromides for insomnia. Gymnastic exercises, school work, and manual labor during the remissions certainly contributed greatly to the cure.

Intestinal Obstruction.—Irving M. Snow³ reports the case of a boy of 3 years who was attacked with vomiting, obstinate constipation, and agonizing abdominal pain. There was no tenderness, induration, nor abdominal tumor to be felt; no fever. After twelve days the child died of exhaustion and inanition, from pain, vomiting, and interruption of assimilation from an unrecognized abdominal obstruction. There was no peritonitis, and the appendix was healthy. The symptoms were due to the snaring of a coil of ileum in a loop formed by an intestinal diverticulum projecting from the ileum and connected by a slender ligament to the mesentery, close to the ileo-cecal valve. This glove-finger-like diverticulum (Meckel's) was given off twelve inches from the ileo-cecal valve and measured two and a half inches in length. The mechanism of the snaring of the bowel is simple. Meckel's diverticulum is the persistence in extrauterine life of a fetal structure, the omphalo-mesenteric duct. This, with its ligament, forms a loop floating free in the abdominal cavity. Exaggerated or irregular peristalsis may cause coils of intestines to pass through the arcade thus created, and by the tightening of the loop stenosis or complete intestinal strangulation occurs. In this case the bowel was not tightly compressed, fecal matter passed through the constriction, and olive oil was forced above it. This seeming perviousness of the intestine caused a fatal error in diagnosis. The condition was not recognized as intestinal obstruction, and, not being relieved by operative treatment, ended in death.

Leucocytes in Healthy and Diseased Infants.—Japha⁴ made numerous blood examinations in healthy and diseased infants, controlling them by means of studies made with the blood of adults. He found that in infants digestive leucocytosis cannot be looked upon as a phenomenon appearing with any degree of regularity, so that its diagnostic value is out of the question. In adults there is a digestive leucocytosis in a restricted sense, but it does not appear with absolute regularity. Its highest point is in the afternoon, and it seems to consist chiefly in an increase of the polynuclear cells. This digestive leucocytosis is not to be looked upon as an essential part of resorption, but only as an accompaniment. From this point of view its diagnostic value even in adults is limited.

Middle Ear, Inflammation of, in Infants and Children.—Adolph O. Pfingst¹⁰ dwells upon the frequency of middle-ear affection during the diseases of early child life, particularly during measles. He quotes a statement of Borth that 80 per cent of all sick infants have a lesion of the tympanic cavity of greater or less severity. The relatively wide and short Eustachian tube is held in a measure responsible for the frequent infection of the middle ear, inflammation resulting more readily on account of the general as well as local lessened vitality or resisting powers. The course of otitis media in very early life is characterized by its mildness. Pain is not frequently present, and is not of as severe a nature as in later life, so that the condition is easily overlooked, especially so since digestive disturbances are so often present.

Myxedema in Childhood.—Albert de la Chapelle¹¹ reports a case in a girl of 14 years treated in the Helsingfors Hospital, the first case known in Finland. Since her second year the patient had shown symptoms of myxedema, with almost complete arrest of physical and mental development. She was only thirty-four inches tall, the anterior fontanelle was still open, the face coarse and heavy, the tongue swollen and protruding. There were no teeth, excepting the carious remains of milk teeth. The abdomen was projecting, the extremities massive. The skin and its appendages had the characteristic appearance of myxedema: the thyroid gland was not perceptible to palpation. No signs of puberty. The patient's mental development was that of a child of 1 or 2 years. She had a mania for demolishing and for picking up objects. Thyroid treatment was instituted and continued for four years with intervals. The symptoms of myxedema have disappeared. The body is less deformed and movements are more active. There has been a growth of twelve inches. The anterior fontanelle is closed. The child has twenty-eight new teeth. The genital organs are not developed, and there are no signs of puberty. Mentally the patient has developed enough to take care of herself in the institution to which she has been admitted. A radiograph of the forearms and hands shows that the cartilage between epiphyses and diaphyses is well preserved, wherefore he concludes that there will probably be further growth.

Pertussis, Citrophen in.—Feuchtwanger¹² used citrophen in forty cases of pertussis and found that it was easily taken and retained by children. The drug is soluble in water and consists of citronated phenetidin. The paroxysms are markedly lessened, and the night attacks decrease in number after the second night, ceasing almost entirely. The remedy must be continued for weeks, because as soon as it is withdrawn the cough returns. The duration of the disease is shortened, and no symptoms of intoxication occurred in any case. The dose for infants is 0.1 gramme, for children 1 to 3 years old it is 0.15 to 0.3 gramme, and for older children 0.4 to 0.5 gramme three times a day.

Prolonged Intubation, Case of.—Domenico Tantarri¹³ reports a case in which the tube was left in position for one hundred and thirty-six days. His conclusions are: 1. That this is the first case on record of such prolonged intubation. 2. That a possible complication of croup is a peritracheo-laryngeal abscess. 3. This may be followed by partial necrosis of the cricoid. 4. In acute laryngeal stenosis lasting any considerable time intubation is a valuable resource. 5. The tube may remain *in situ* a long time (one hundred and thirty-six days in the case reported) without any disturbance or traumatism, provided that the tubes are of the right size and that the surgeon bears in mind the delicate structure of the organ upon which he is operating. 6. O'Dwyer's fenestrated tube renders great service in cases of exuberant granulations of the cricoid. 7. Ichthyol with gelatin is an excellent laryngeal medicament in cases of intubation. 8. When feeding is difficult, meat gelatin gives good results.

Purgation with Opium.—J. W. Wainwright¹⁴ reports a case of intestinal obstruction in a child of 5 years. Laxatives, cathartics, and an enema under chloroform were without result. There was no escape of gas, no vomiting, no pain. It was found that the child had eaten about two ounces of cheese, and it was believed that the cheese had lodged at the ileo cecal valve and was causing all the trouble. Five days after a movement of the bowels, and after every effort had failed, an operation was thought imperative in order to save the child. The father, a physician, declined to have an operation, believing that the patient would succumb to shock. A surgeon residing in a distant part of the city was brought into the case, who, after hearing the history, making an examination, and listening to the father's reasons for objecting to an operation, suggested one more effort to dislodge the obstruction before operating. His instructions were carried out to the letter and were as follows: A quantity each of tinctura opii deodorata and tinctura belladonnæ was procured, and two drops of the tinctura opii given on the tongue with a medicine dropper every half-hour. This was kept up until there was complete coma with stertorous breathing, and this condition maintained for two hours, during which there was contracted pupil, insensible conjunctiva, threatened paralysis of the muscles controlling the tongue, etc. At the expiration of two hours the patient was allowed to recover from the effects of the drug, taking about four more hours, with the aid of small quantities of tinctura belladonnæ, which had been held as an antidote to the effects of the opium, if needed. Upon regaining consciousness he at once had a free stool, in which a knuckle-shaped mass was found which proved to be cheese. The patient made an uninterrupted recovery. The cathartic action of the opium was rather the complete muscular relaxation which chloroform had not succeeded in bringing about, extending to the muscular coat of the intestines, thus allowing the mass to pass through the ileo-cecal valve by gravitation.

Rectal Disorders in Children.—Samuel G. Gant¹⁴ says that there are three diseases of the rectum that are frequently met with in childhood: Prolapsus ani, proctitis, polypi. The first is the most frequent. Occasionally this will get better as the child gets older, but, as a rule, the reverse is the case. Many can be cured by palliative measures. The essential feature of the palliative treatment consists in keeping the child in the recumbent posture during defecation, thus counteracting the force of the abdominal muscles. Frequent enemata of cold astringent solutions are valuable, such as alum, zinc, lead, infusions of black oak bark, etc. After each action a firm pad should be placed over the anus and the buttocks should be strapped together by adhesive strips. A pre-existing diarrhea, constipation, or cough must be relieved, otherwise the above treatment will fail. If the remedies do not cure the patient, operation must be resorted to, that known as linear cauterization being the best. Proctitis may be acute or chronic; its most important etiologic factor is enterocolitis. The essential points in the treatment of proctitis may be briefly summed up as follows: 1. Remove at the earliest opportunity the source of irritation. 2. Harsh and indigestible foods are to be discarded, and milk, soft-boiled eggs, soups, beef juice, and albuminous foods substituted. 3. Clear the bowel of any scybala that might be present by injections, Epsom salts, Seidlitz powders, and mineral waters. 4. In mild cases cold water applied to the hips and the anus or the injection of cold water into the rectum will be sufficient. 5. Have them rest quietly in bed during the acute stage. 6. In chronic cases use frequent injections of astringent solutions, such as alum, zinc, silver, lead, and the sublimate. When due to thread worms a few injections of lime or salt water, in conjunction with *santonin* internally, will destroy them. If the inflammation is due to gonorrhea, frequent injections of water, as hot as the patient can bear it, do well. In a general way the treatment consists in keeping the bowels open and in correcting any errors in diet. Polypi rarely cause pain, but produce a sensation of weight and uneasiness in the rectum. They sometimes bleed if ulcerated, but the principal symptom is frequent mucous stools, excited by the growth, and straining in the patient's endeavor to expel it. Palliative measures are useless. Polypi should be removed.

School Chairs.—J. S. Stone¹⁵ writes of the injurious effects of improperly constructed school chairs. Unquestionably, strong children can withstand without permanent injury the bad effects of improperly fitted school seats and desks. Still, lateral curvature is a disease originating almost always during school life, the number of cases found increasing regularly with the age of the scholars examined. It is much more frequent among girls than among boys. It is a well-recognized fact that the ordinary type of lateral curvature is that of the writing position. There is no dispute as to the necessity of holding the book directly in front of the median line of the

body; there is some dispute as to whether vertical or slanting penmanship is preferable. In Nuremberg twice as many incorrect postures were found among those writing the oblique as among those who wrote the vertical script; in Munich two and a half times as many; in Fürth and Würzburg four times as many. The great problem of constructing school chairs has been in regard to the back. There are two essentials to a proper back. In the first place, under no circumstances should the shoulders be forced forward. In the second place, the physiological anterior lumbar curve should be maintained—that is to say, there should be a firm support for the sacrum and lumbar region, and at the same time a moderate support for the dorsal region up to the shoulder blades. In this way the liability to round shoulders is decreased, and account is taken of the fact that full extension of the spine tends to prevent lateral curvature, while flexion allows it. The necessity for a proper support for the lumbar spine has been recognized in the seats made for typewriters. The introduction of the typewriter chair back with an adjustable automatic spring conducted on hygienic principles has not come about through the agitation of theorists, but has been brought about through a recognition of the fact that the avoidance of fatigue is of financial value. The question is whether the health and well-being of the growing children of the community is of as great consequence as the comfort of typewriters, in whom, because of greater age, deformities are much less likely to arise. In the past the great defect in the school seats has been the failure to recognize the fact that no attitude, no matter how good in itself, can be long maintained without fatigue. Change in position is necessary, and, if a proper change is not possible, a scholar must, for the sake of a change alone, assume an improper attitude. It is to allow a change of distance, to allow an upright and a reclining position, to allow for some changes in the antero-posterior curves of the spine, while at the same time always giving a firm lumbar support, that Prof. Miller has devised his chair.

Spine, the Mechanics of Lateral Curvature of the.—Robert W. Lovett¹⁷ sums up his paper as follows: Torsion and side flexion of the spine are parts of one compound movement, and neither exists to any extent alone. Lateral deviation of any part of the spinal column is therefore necessarily associated with torsion (rotation) at the seat of the deviation. In flexed positions bending is associated with torsion in one direction, in extended positions by torsion in the opposite direction. In this it follows simply the mechanical law governing flexible rods, which rotate in general in the same way in corresponding positions. From the kind of torsion observed in scoliosis it is obvious that the deformity originates in the flexed position of the spine. The correction of the rotation would therefore seem to be logically made by throwing the spine into extended positions and in taking side bendings from extended positions. Sitting in the flexed position by school

children is likely to be harmful, and sitting in a twisted position of necessity induces lateral deviation temporarily. The immediate cause of lateral deviation is, as a rule, to be found in some asymmetry of development or posture which leads to an oblique direction of superincumbent weight, causing the spine to deviate from the middle line.

Substitute Infant Feeding.—Henry Dwight Chapin¹⁸ gives directions for securing clean, wholesome cow's milk, for preserving and for modifying it to suit the infant's needs. Cases are constantly arising where milk must be withheld for a time or given only in small quantities. The symptoms that call for a modification or a change of diet are vomiting, colic, and unnatural stools. *Vomiting.*—When this occurs immediately after feeding, it is probably caused by a simple distension of the stomach, and less bulk of food is accordingly indicated. The vomiting that occurs some time after feeding is apt to be caused by undigested food; the ejections are frequently highly acid, and there may be curds and mucus present. Projectile vomiting, where food is rejected with force, is a symptom of brain irritation. *Colic* may be caused by cold, but is more frequently induced by the fermentation of indigestible food. *Condition of the Stools.*—The normal infant's stool is smooth, yellow, homogeneous, and about the consistence of thin mush. The following may be considered abnormal types:

1. *Green Stools.*—Stools can only be considered green when that condition is evident immediately upon their passage. They are due to a fermentation which is doubtless the result of bacterial action. All stools become green a certain time after passage, caused by oxidation of the air.
2. *Curdy Stools.* Curdy lumps may be produced by undigested casein or fat. The former are hard and yellowish, while the latter are soft and smooth like butter.
3. *Slimy Stools.* These are the result of catarrhal inflammation. When the mucus is mixed with the fecal matter the irritation is high up in the bowel, but when flakes or masses of mucus are passed the trouble is near the outlet.
4. *Yellow, Watery Stools.* These are seen in depressed nervous conditions, especially in the hot days of summer, when the bowel is relaxed and the inhibitory fibres of the splanchnic nerve do not act to advantage.
5. *Very Foul Stools.* These are caused by decomposition of the albuminoid principles of the food.
6. *Profuse, colorless, watery stools,* with little fecal matter, are doubtless caused by an infective germ akin to that of Asiatic cholera. This is known as *cholera infantum*.

It is rare to see one of these types by itself. With the exception of the last, they may be seen in all combinations.

In slight forms of unnatural stools we should increase the dilution of the top milk and reduce the quantity of sugar slightly. If large lumps of fat are in the stools, milk containing less fat should be used for diluting; this can be obtained by taking more top milk out of the quart bottle. If this procedure does not overcome the trouble, then we must stop the

milk and feed dextrinized gruel for a day, gradually adding a little milk, which is increased in amount as fast as the infant can digest it. There are times when infants cannot digest milk in any form, no matter how much it may be diluted nor what diluent is employed. They may then be given mutton broth from which the fat has been removed, extracted beef blood and water, dextrinized wheat or barley gruel, or dextrinized gruel to which either the white or yolk of an egg has been added.

Tonsils of Young Children, Significance of, as an Entrance for Tuberculous Infection.—Friedman¹⁹ examined the tonsils of 54 living and 91 dead children under 5 years of age. In 7 cases of general tuberculosis the tonsils showed a more or less marked tuberculous lesion; 8 other general tuberculosis patients had tonsils which contained many cicatrices, which may mean old, healed tuberculosis. In 7 cases the tonsils showed typical giant cells and tubercles, but no tubercle bacilli, while other tuberculous lesions were present in 2 of the cases only. In 3 cases with tuberculous cervical lymph nodes the tonsils showed cicatrices only, and the author thinks it probable that these represent an old, healed tuberculosis from which the cervical nodes were infected; 4 other cases had normal cervical lymph nodes and normal tonsils, without cicatrices; 2 cases of pulmonary tuberculosis did not show any tonsillar lesion, while one case of lung infection was accompanied by cysts of the tonsils and 2 others by tonsils free from tubercles but having tubercle bacilli on their free surface, as evidenced by smears. In the case of a baby 24 days old without any tuberculous lesion in the body, a smear from the tonsils showed one tubercle bacillus, evidently brought there by the food. One case of primary tonsillar tuberculosis is reported, in which both tonsils showed a very acute, diffuse lesion with many tubercle bacilli and no other tuberculous focus in the body. In one case the tonsils were the seat of an apparently healed tuberculous lesion, the rest of the viscera being free from tuberculous infection. In all the other autopsied cases the tonsils were negative as to tuberculosis. Fifty-two of the cases examined during life showed a complete absence of tonsillar tuberculosis, although in many of the children adenoid vegetations were examined as well as the tonsils, and 6 had enlarged cervical lymph nodes. One case showed lesions in the tonsils simulating healed tuberculosis, and one, an apparently healthy child of 3½ years, had a marked tuberculosis of the right tonsil, tubercle bacilli being found. The source of this affection could not be ascertained with certainty, though the tonsil had infected the submaxillary and cervical lymph nodes. Practically but two methods of infection are possible for the tonsils, primary infection by the food and secondary by the sputum, and in children both are at least equal in frequency. Consequently prophylaxis and not therapy must be looked to for help. It seems probable that the tonsil does not act as the point of entrance for the tubercle bacillus without

becoming infected itself. While the primary tonsillar lesion may heal without giving rise to further infection, it does, as a rule, lead to involvement of the cervical lymph nodes and even of the mediastinal nodes, while there is the constant danger of the entrance of tubercle bacilli into the circulation.

Tuberculosis of the Female Genital Tract in Children.—Martha Wollstein²⁰ reports the case of a child of 2 years who had had measles followed by persistent cough and emaciation. A purulent vaginal discharge had been noticed for several weeks before death, but no bacteriological examination had been made. At the autopsy tuberculous lesions were found, the oldest being one in the bronchial lymph nodes, the youngest in the lungs, spleen, and liver. The Fallopian tubes, pelvic peritoneum, and right ovary became involved, in the order named, before the other viscera. The fact that the vaginal discharge was not examined during life cannot be sufficiently deprecated. Vierordt calls attention to the fact that even in children a genital tuberculosis, evidenced by a tuberculous vaginal discharge, may be the beginning of a tuberculous peritonitis. The present case is unique in that two abscesses, one in the right broad ligament, one in the cul-de-sac of Douglas, were present. The genital lesion in children may be primary or secondary; nine of each variety have been reported. Primary infection may occur by direct contact of the tubercle bacilli with the vulva or vagina, and the source of contamination can then usually be found in the child's immediate surroundings. Or the tubercle bacilli may be carried primarily to the tubes or uterus by the blood, without the appearance of any lesion at the point of entrance. Secondary infection may occur from a primary lesion in any part of the body, and may affect the genital tract directly, as in the case of a year-old baby reported by Constensoux, where the tracheo-bronchial lymph nodes were the oldest seat of the tuberculous process, and the Fallopian tubes were involved before the peritoneum; or the tubes and uterus are affected only after a tuberculous peritonitis has been developed. Maas' case is interesting in this connection. At the autopsy of a girl 5 years old, two bands of fat and connective tissue, containing many blood vessels and fibroid tubercles, were found running from the umbilicus outward along the inner surface of the abdominal wall. These had evidently resulted from the entrance of tubercle bacilli through the open umbilicus in earliest infancy, and had carried the infection to the peritoneum, whence it had passed to the tubes and uterus. Again, secondary infection may occur from the intestine, the bacilli wandering into the vagina; or, falling into the peritoneal cavity from the peritoneal surface of an intestinal ulcer, they may be carried into the Fallopian tubes and uterus with or without the appearance of a tuberculous peritonitis. An intestinal ulcer may also rupture into the peritoneum or into the vagina. Finally, an ulcer in the bladder may rupture into the vagina.

Tuberculosis.—An editorial²¹ calls attention to the insidi-

ous nature of this disease and the difficulties of its detection. Comby makes a clinical division of three varieties, one of which is the usual pulmonary form. The two that are of the most interest are, first, an apyrexial tuberculosis, which runs the course of an ordinary athrepsia or dyspepsia, with symptoms of emaciation and diarrhea; and, second, a febrile tuberculosis due to an acute infection, with symptoms that simulate pneumonia, typhoid fever, and meningitis. Progressive emaciation, either with or without temperature, should lead to a careful examination of all the lymph nodes; and in a case where the history is uncertain regarding the presence of tuberculous foci in the respiratory area, attention should be directed to the abdomen for detection of the enlargement of the mesenteric lymph nodes and for changes in the peritoneum. The onset of tuberculosis in the abdomen, either in the mesenteric lymph nodes or in the peritoneum, may not be recognized, but the autopsy notes show that such cases are far from rare and call for clinical records that will aid in the diagnosis. It is not unlikely that the symptoms are not wanting, but that sufficient attention is not directed to them. If the dangers of tuberculosis are to be overcome, they must be appreciated by a consideration of symptoms due to foci of infection outside of the lungs.

Tuberculous Peritonitis.—Augustus Caillé³ reports 13 cases operated upon for this affection. The diagnosis, he says, is based upon the abdominal symptoms, such as distension, pain, and disturbed bowel action, presence of fluid, and loss of weight, and is made by exclusion, except in those cases in which the tubercle bacilli are found, and then the diagnosis is positive. Fever of an irregular type was found in all cases. Cases of chronic non-tuberculous serous peritonitis present usually the features of an ordinary ascites, the abdominal fluid being free, whereas it is usually not free in the tuberculous variety. In doubtful cases the opening of the abdomen is indicated and will do no harm. Paroxysmal pain in the abdomen in children, in the absence of chronic appendicitis or abdominal fluid, is not indicative of tubercular disease, and is frequently overcome by dieting and attention to and irrigation of bowels. To the three varieties of tuberculous peritonitis hitherto formulated by various observers—(1) chronic tuberculous ascites (miliary form), (2) fibro-caseous tuberculous peritonitis, (3) fibro-adhesive tuberculous peritonitis—the author would add a fourth variety. (4) tuberculous peritoneal tumors. The infection of the peritoneum can come about by way of the circulation or from the gastro-enteric or genito-urinary tract. The cases reported show the futility of medicinal treatment. The indication is early operation, which is, no doubt, of very great benefit to the patient when the tuberculous process is limited to the peritoneum. As regards the establishment of a complete cure, the author is somewhat sceptical, because of the persistence of mild abdominal symptoms, of irritative catarrh or inflammation in bronchi, lungs and pleuræ, and intestines, in a number of cases which remained under his observa-

tion two years after operation. If, at the time of operation, we have coexisting tuberculosis of the lungs or pleura, the ultimate results are unsatisfactory, although some improvement usually takes place for the time being.

Urethral Diverticula in Boys.—J. v. Bokay^o classifies such diverticula as true and false. Of the former variety he collected 11 cases from the literature, and reports 3 of his own, occurring in boys of 3 weeks, 3 years, and 3½ years respectively. All three were fatal and of congenital origin. Autopsy was performed in two cases. The diverticulum in all the collected cases varied from the size of an almond to that of a fist, and extended to the peno-scrotal fold only. The prognosis is absolutely bad in these cases, unless an operation is performed, when the results are very favorable. Eight of the 14 cases were cured by operation, 6 perfectly and 2 with a small fistula remaining. The bad effects of the diverticulum upon the urinary tract are evidenced by pyelonephritis, hydro-nephrosis, and hypertrophy of the bladder; these may antedate the operation and render it ineffectual.

One case of false diverticulum is reported. It occurred in a 20 months-old baby and was caused by calculi.

REFERENCES.

- ¹ Boston Med. and Surg. Jour., Aug. 9. ² Wiener Med. Blätter, vol. xxiii., No. 33. ³ Arch. Ped., July. ⁴ Ped., June 15. ⁵ La Clinique, June, 1900. ⁶ Lancet, May 26. ⁷ Jour. of Nervous and Mental Dis., May, 1899. ⁸ Arch. de Neurologie, Aug., 1900. ⁹ Jahrbuch f. Kinderhk., vol. lii., No. 21. ¹⁰ Jour. Am. Med. Assoc., June 23. ¹¹ Finska Läkarsällskapets Handlingar, July 19. ¹² Der Kinderarzt, vol. xi., No. 8. ¹³ Giornale internazionale della Med. Sci., July. ¹⁴ Bost. Med. and Surg. Jour., Aug. 16. ¹⁵ International Med. Mag., Aug. ¹⁶ Boston Med. and Surg. Jour., Aug. 30. ¹⁷ Boston Med. and Surg. Jour., June 14. ¹⁸ Jour. Am. Med. Assoc., July 14. ¹⁹ Beitr. z. path. Anat. und z. allgem. Patholog., vol. xxviii., No. 1. ²⁰ Arch. Ped., May. ²¹ Arch. Ped., June.

ITEM.

THE meeting of the SOUTHERN SURGICAL AND GYNECOLOGICAL ASSOCIATION will be held in Atlanta, November 13, 14, and 15, under the presidency of Dr. A. M. Cartledge, of Louisville. Members of the medical profession are cordially invited to attend.

THE AMERICAN
JOURNAL OF OBSTETRICS
AND
DISEASES OF WOMEN AND CHILDREN.

VOL. XLII. NOVEMBER, 1900. No. 5.

ORIGINAL COMMUNICATIONS.

THE EDUCATION OF THE LAITY UPON SEXUAL MATTERS:
WHEN SHALL THEY BE TAUGHT, AND TO WHAT EXTENT?¹

BY

RUFUS B. HALL, A.M., M.D.,
Cincinnati, O.

ONE year ago, in my absence, you did me the honor to elect me President of this distinguished body. I am fully conscious of the exalted position and appreciate the friendly spirit and kindly good-will that induced you to so honor me. This Association has become noted for the excellence of its scientific work, the truthfulness of its records, the sharp debates upon the floor, and the spirit of warm friendship that pervades its membership at all times. One who is not accustomed to attend its meetings cannot understand how such sharp debates can be carried on here with the existence of that feeling of friendship and brotherly love which is prevalent among us, until he realizes thoroughly that this is a scientific body and that all the discussions have one main object in view—that of bringing out the truth, the whole truth, and nothing but the truth.

¹ President's address, read before the American Association of Obstetricians and Gynecologists, at Louisville, September 18-20, 1900.

I am certain that I express the sentiment of every Fellow of this Association when I express our thanks to Dr. William Warren Potter, the distinguished Secretary, to whose untiring efforts the American Association of Obstetricians and Gynecologists' high standing owes so much. Nor are we unmindful of our obligations to my distinguished predecessors, who, by their justice, courtesy, and dignity in office and wisdom in council, have guided our deliberations and smoothed our difficulties. To hold an office once graced by such as have been honored in the past is a matter of no small moment in one's life and one that is highly appreciated by the speaker. Allow me to thank you for the honor you have done me by electing me to preside over this Association at its thirteenth annual meeting. The associations of these years have been among the most pleasant of my life. Perhaps a true interpretation of my duties of the hour would demand that I address you by recounting the recent advances in our branch of surgery, and discuss the technique of different operations or the management of septic infection following abortion or labor. But, inasmuch as the greatest latitude is granted me, I prefer to restrict my remarks to the discussion of "the education of the laity upon sexual matters: when shall they be taught, and to what extent?"

Every one engaged in abdominal and pelvic surgery realizes the fact that pelvic inflammation in women, with all its attendant evils, is accompanied by the greatest suffering ever inflicted upon womankind. This suffering is prolonged in many instances over a long period of time, extending into months and even years, and finally ends, in a large number of cases, in the most serious operation in surgery and not infrequently in death. If the patient does recover from the operation she is maimed for life. She has been deprived of her ovaries. She has been grievously sinned against. We know that this disease, which has entailed so much suffering, might be prevented, in a very large percentage of the cases, if the parties most interested were possessors of the knowledge which is due them. When we consider the large number of innocent women, victims of pelvic inflammation on account of their ignorance, who pass through the hands of the gynecologist annually, it does not seem right that we should never raise a voice in their behalf. There is something wrong with society at large or the medical profession is derelict in its duty. If the latter is true, it is time the profession should make a great effort for the prevention of these diseases. You will ask how this is to be

brought about. It will require many papers upon this subject and repeated discussions before any well-grounded plan is formulated and carried forth by the profession to the point of producing good results. I am certain if a society like this would indorse these sentiments in an emphatic manner it would exert a great influence upon the profession at large, and it would not be long before the good effect of this teaching would be apparent. In the papers and addresses read by Fellows of this Association before societies composed of family practitioners, the prevention of pelvic inflammation should be given prominence until the whole profession is as well informed on this topic as we are. The family physician must be the educator of the people in this direction. And when he gets the indorsement and is sustained in his position by the specialist, his influence will be greatly strengthened and widened. Great good could be accomplished in this direction by the education of the laity upon sexual matters. But the questions arise, When shall they be educated, and to what extent? I am aware of the fact that these are difficult and delicate questions to answer, but this should not deter us from our duty. I fully appreciate the fact of the great delicacy and hesitation on the part of parents to talk about these subjects to their sons and daughters. When we realize this fact the greatness of the subject begins to dawn upon us. But this is a just and righteous subject and one that is bound to be thoroughly aired by the laity in the near future. In a paper presented to this Association in 1895 I called attention to this fact. I believe now, as then, that the sooner the medical profession does its plain and whole duty in this matter the better for us all. I believe that many honest, conscientious, well-meaning citizens would rebel at the thought of educating the youth along these lines, yet this does not relieve us of our responsibility. They have been made to believe that no person except physicians should know anything about the sexual function except as they learn it by accident. This is all wrong, and to this wrong teaching many of the calamities spoken of could be credited. Knowledge is power in this as in every great undertaking in life. It will only be necessary to disseminate the information that pelvic suppuration is preventable, and a great advance in the right direction will have been accomplished. This knowledge would do good in two directions. First, if young men knew that they would be held responsible in after-life if they should contract gonorrhea, they would not take the risk of contracting it. Second, if young women knew

the risk they incurred in marrying a man with loose habits, they would look more carefully into his past life and would not marry rakes, as so many of them do now.

I would advise that during the last year in high school, in every school in this land, a text book be employed embracing embryology, hygiene, anatomy, and physiology including sexual physiology, and that these subjects be taught to every student, both male and female. This could be accomplished, without shocking the morals of the most susceptible or fastidious individual, by dividing the classes so as to separate the sexes. A female teacher should teach the girls, and a male teacher the boys. This is the very time in life when individuals should be taught to know the functions with which a wise Providence has endowed them, and how to care for their bodies as well as their minds. They should study the sexes of the flowers in their botany and be made to know their meaning, which they are not made to understand now. It would be a revelation to them to know that the sexual organs, in animals as well as the human race, are among the first centres to be formed and can be recognized as such early in intrauterine life. This knowledge of the early development of the sexual organs could be gained by the study of their development in animals. For instance, take the chick, for the sake of convenience. The centres from which the sexual organs are developed appear in the early half of the second day after incubation. In the rabbit they appear as early as the eighth or ninth day; in the human fetus as early as the fourth week, and the sex can be determined at the end of the ninth week. No study could be more fascinating or interesting to intelligent young people than the one under discussion, and none could yield a richer return to the state and to the morals and health of the community.

These facts are not new to doctors, and are only mentioned here to show the importance of the subject under discussion, and to emphasize that Nature has designed the sexual organs to be a prominent and essential part of the human body, and they should be cared for as carefully as the brain, heart, lungs, or any other part of our bodies.

In discussing this subject privately with some of my medical friends, they intimated that such knowledge disseminated among young people would greatly increase the social evil in the land. I believe that just the opposite would be the result. It is known to be a fact that the young men who lead vicious

lives form the habit while they are young, many of them in their teens, and the vast majority before they are 20 years of age. Another fact known to physicians is that not one in a hundred of these men know what a serious disease gonorrhea is before they are the subject of it. The subject of "clap" is treated as a huge joke among young men and boys, and not given the consideration it deserves. The popular belief among the laity is that gonorrhea is a disease that hurts no one, except temporarily, and when they are cured of their discharge, which they believe can be done in two or three weeks, they are perfectly well. The prevalent opinion among the laity is that a young man can have this disease and get well in a few months, and I am sorry to say not a few physicians believe this also. If we could educate these young men, and let them know what a serious disease gonorrhea is, how it clings to them in after-life, and if they marry how likely they are to infect their wives months or even years afterward, this would have a great influence in preventing them from forming these vicious habits. This knowledge could be imparted very easily by a few lectures upon bacteriology, by demonstrations with the microscope or with the use of lantern slides. These demonstrations should include the staphylococci, streptococci, and gonococci. These young men all know, long before they reach this period of life, that there is such a disease as "clap," or gonorrhea. But the difficulty heretofore has been that they have received their knowledge through wrong channels—public gossip—and their teacher was, therefore, not well informed as to the serious nature of the malady. Disseminate the knowledge early in life to every youth in the land that clap is more dangerous than syphilis, and great good will be accomplished at once. They should know that once they are infected it may require years of careful treatment to effect a cure; that many remain uncured during the remainder of their lives; that a great many who believe themselves well infect their wives years after they supposed themselves cured, conveying a deadly disease to the one they have promised to love, cherish, and protect. This disease may and frequently does cause death, or, what to many a young wife is worse than death, destruction of her sexual organs, blighting her household and happiness. I have enough confidence in human nature to believe that if we could educate the rank and file of American youth upon this important subject (the danger of infection and its consequences) before they have commenced

leading vicious lives, we could prevent a great many men from indulging in this vicious habit, and thereby add a great blessing to them and the state. Let them know the real danger as we know it, and it would be rare indeed that a man would thus deliberately take the risk of contracting the disease.

If I were to tell you the expressions of sorrow, chagrin, and surprise that I have received from some of these young men after it is too late to be of service to them or their wives, I would only be repeating the tale of woe that you have all heard time and again. How often we see a young woman who has always enjoyed perfect health previous to marriage, and menstruated without any inconvenience more than a slight discomfort, soon after her marriage to a man who has been the subject of gonorrhea, but now believes himself cured, give a history something like this: Within three weeks after marriage she commenced to complain of pelvic pain and vaginal discharge. She gradually grew more and more incapacitated each week for any active muscular exertion. And if the case progresses rapidly, within three or four months she is an invalid with suppurating tubes or ovaries, or both, and the only means of saving her life is a serious surgical operation and the sacrifice of her ovaries and tubes. Not infrequently this does not save her life; because not a few of these acute cases die under the hands of the best man in the world. All of you can recall more than one case every year. More frequently we meet cases that extend over a longer period of time. The woman first suffered with a slight vaginal discharge, with perverted and changed type of menstruation. The flow became more profuse and prolonged, with more suffering before, during, and after menstruation than ever before. After a year or two she has an attack of pelvic inflammation one or more times a year until she becomes a chronic invalid. She may have been under the care of her family physician and had the very best care and treatment that could be bestowed upon her, yet the disease grows worse, until she is bed-ridden, and the specialist is asked to see her. He finds a well-defined tumor at one or both sides of the uterus, with that organ fixed in a mass of adhesions. To relieve the poor sufferer he advises an operation for removal of the diseased organs. This may be three, four, or five years after her marriage, yet the origin of the disease dates to within three weeks of her marriage and is due to gonorrheal infection.

I have had the husbands of these women say to me, with tears in their eyes, time and again, that they had been told by their physicians that their clap was well, that they could not infect any one, and their disease would give them no trouble in the future. Many of them have said to me that they had not been exposed to the disease for years before marriage, yet they infected their wives just the same.

If these were rare or isolated cases we would not feel the necessity of raising our voices against this great evil; but you, gentlemen, every one of you, know that they are not rare. Think of the number of women suffering from pelvic inflammation who pass through the physician's hands every year, and also the large number who pass through the hands of the gynecologist who are compelled to submit to a section to save their lives, largely on account of the ignorance of the laity upon this subject, and you will agree with me that it is time something was done to protect these innocent women. These facts make it incumbent upon the medical profession to disseminate the knowledge that will correct this evil and right the grievous wrong that is inflicted upon innocent and confiding young women all over this land.

Just how much should be taught to young women is a difficult question to decide, but enough could be taught by a few lectures, with lantern slides and microscopical demonstrations of the various modes of infection and the havoc wrought in the sexual organs of women from inflammation, to set them thinking upon this matter without offending their sense of propriety. And enough ought to be taught to emphasize the danger of septic infection following retained decidua in abortion. Let these young ladies know before they are married what danger they incur from infection following abortion, and it would be rare indeed that a woman who has not a crime to conceal would consent to have an abortion produced or even attempted on her own person. It could all be covered in one short chapter in a text book, and would do more to prevent criminal abortion in married women than all the moral suasion in the world. To contend that this is a subject that should not be spoken of except to married people is shifting the responsibility. It is a well-known fact that boys and young men speak of this subject to each other and talk about the matter in an ignorant sort of a way; but it is very doubtful whether young women have much knowledge upon this subject. If this subject were properly taught in the last year of high

school, as suggested, it would do more in ten years' time to correct the social evil, the evils of criminal abortion and of gonorrheal infection among young men and their wives, than has been done in the past hundred years.

When the laity become educated upon this subject as they should be, and understand the meaning of pelvic inflammation in young wives as we understand it, the parents and guardians of young girls will realize that they owe them a duty before consenting to their marriage. When this time arrives, the parents and guardians of young girls will be as careful to inquire after the moral habits and the social character of their daughters' suitors as they are now wont to do about the size of their pocket-books. They will not consider their daughter well married, if she marries the son of a millionaire or a promising young lawyer or doctor, if she is to be subject to pelvic inflammation from infection within a year after her marriage. In fact, they will consider it more important that the prospective husband of their daughter is a morally clean man than to be the son of a millionaire. When the laity become educated as they should be, the abdominal surgeon will make fewer sections for this preventable disease than he is now making, and a corresponding amount of misery and death will be prevented.

628 ELM STREET.

A CONTRIBUTION TO THE SURGICAL TREATMENT OF UTERINE DISPLACEMENTS.¹

BY

CHARLES A. L. REED, M.D.,
Cincinnati, O.

(With six illustrations.)

THIS paper is not intended to be a general discussion of the surgical treatment of uterine displacements, but is offered solely for the purpose of calling attention to a couple of modifications of technique in the management of a class of cases that is happily becoming less and less perplexing. The distressing symptoms caused by many cases of uterine displacements, and the uniformity of their recovery after judicious surgical treat-

¹ Read before the American Association of Obstetricians and Gynecologists, at Louisville, September 18-20, 1900.

ment, happily render a defence of the latter entirely unnecessary. Of the failures that yet occur, the most of them are examples of persistence of pain after the displacement has been overcome, and I state without fear of contradiction that the majority of such failures are attributable to the operation of abdomino-fundal fixation undertaken for the cure of retrodisplacements. You will pardon me, I am sure, if I pause long enough briefly to consider this operation.

Hysteropexy, as the procedure is generally designated by its advocates, is designed for adoption in cases of persistent retroflexion which fail to yield to simpler plans of treatment through the vagina, "and then only when the discomforts of the retroflexion are sufficient to interfere seriously with health."

The operation is done by opening the abdominal wall by a median incision which is carried down close to the symphysis pubis; two fingers are introduced, by means of which all adhesions between the uterus and adjacent viscera are broken up: the fundus of the uterus is brought forward into a state of anteversion, when sutures are passed through the peritoneum and fascia and through the posterior surface of the fundus. These sutures may be of any material ordinarily employed; Kelly uses silver wire for this purpose, and it is probably better than either silk or silkworm gut. There is no objection, however, to the employment of catgut prepared by the formalin process. The fixation sutures are cut short and are left buried. The abdominal incision is then closed, preferably by the laminated suture. It is emphasized that fixation ought not to be effected by the anterior wall, as such a process brings too much traction upon the uterus, which shows a constant tendency to resume its former and abnormal position of retrodisplacement. The fixation by the posterior wall is enjoined because it forces the uterus into a position of pronounced ante flexion. The subsequent course of these cases varies. In the majority of them, the persistent tendency of the uterus to resume its normal relation causes an adventitious ligament to form between the fundus of the uterus and the anterior abdominal wall. The ligament thus formed may vary in length from half an inch to as much as three or four inches. When it is of extreme development it gives the uterus a considerable range of mobility.

This operation is not one of universal acceptance by the profession, and there are serious reasons why it should not be

adopted as a rule of practice. In the first place, it induces an abnormal position, namely, an acute flexion, for another, the pre-existing retroflexion. It is urged that this malposition is generally relieved spontaneously, but there are numerous cases in which such restitution of normal position does not occur. On the contrary, it has happened that fixation of the fundus of the uterus to the bladder has been effected by this operation. Even where the uterus does regain its normal pose, it is necessarily at the expense of prolonged traction, which, in turn, gives the patient keen distress; and even after the adventitious ligament is once formed a painful condition in either the uterus or abdominal wall is induced, rendering necessary a second operation. Kelly has had occasion to perform hysterectomy for the relief of post-hysteropexy pain. In the next place, patients who have submitted to direct fundofixation suffer more from vesical irritation than do patients who have submitted to ordinary abdominal operations. When, as sometimes happens, adhesions of the fundus to the bladder take place and the ante flexion thus becomes permanent and irreducible, the dysuria becomes, in turn, a persistent and most distressing symptom. Kelly enumerates among the various complications attributable to this operation, as done by methods inaugurated by him and now generally in vogue by those who do the operation at all, marked retraction of the scar, due to the dragging of the suspended organ; persistent hypogastric pain; marked displacement of the cervix, either posteriorly or up into the abdominal cavity, coincidently with the advance of pregnancy; a marked thinning of the uterine wall at the point of suspension; abortion or premature labor, occurring spontaneously from uterine irritation induced by the suspension; and persistent excessive nausea of a reflex character, having its origin in irritation of the uterus, due to its adventitious mechanical arrangement. It is admitted, furthermore, by Kelly, that a suspended uterus is liable to carry a child beyond term, being unable to inaugurate the expulsive efforts in consequence of the weakening of the uterine wall by the results of the operation; the labor when once inaugurated is liable to be ineffective, because of the fixation of the fundus and of the consequently weakened condition of the posterior uterine segment. In the event of adhesions occurring between the anterior uterine wall and the bladder, a mass is frequently formed which may offer mechanical interference with the labor. Dilatation of the cervix is

impeded in consequence of its abnormal position; malpositions of the child have been observed with relatively greater frequency in patients who have submitted to this operation; and, finally, it has been observed that the uterus is liable to tear loose from its moorings during pregnancy or labor, leaving a large hematoma at the point of previous attachment. It must surely be admitted that an operation against which an indictment containing so many counts as the foregoing can be justly framed by its inventor and chief advocate, is but little entitled to serious consideration by the profession.

It is not my purpose to discuss the relative merits of Alexander's and Mann's operations, or to take into consideration the

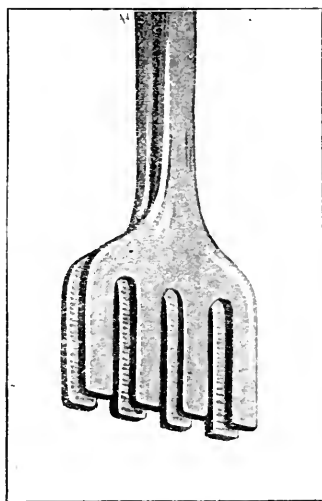


FIG. 1.—Four-pronged forceps for placing a twist in the round ligament.

ingenious technique of Fergusson. I desire simply to assert the conclusion that, in a majority of all cases of retrodisplacements that demand operation at all, the intraperitoneal shortening of the round ligaments is the operation of choice. It has been my habit during a number of years to effect this by making a letter-of-S fold in the ligaments and stitching them, thus folded, to the parietal peritoneum along the line of Poupart's ligament. This method yielded me better results than any which I had previously tried. I have, however, become convinced that the parietal fixation of the folded ligament is not necessary for the purpose of holding the uterus in its normal posi-

tion, and that the technique devised by Mann is all that is required to accomplish this object. My application of this technique differs a little, however, from that originally adopted by Mann, the modifications being those of convenience rather than of necessity. Thus, in seizing the round ligament with hemostatic forceps for the purpose of folding it upon itself,

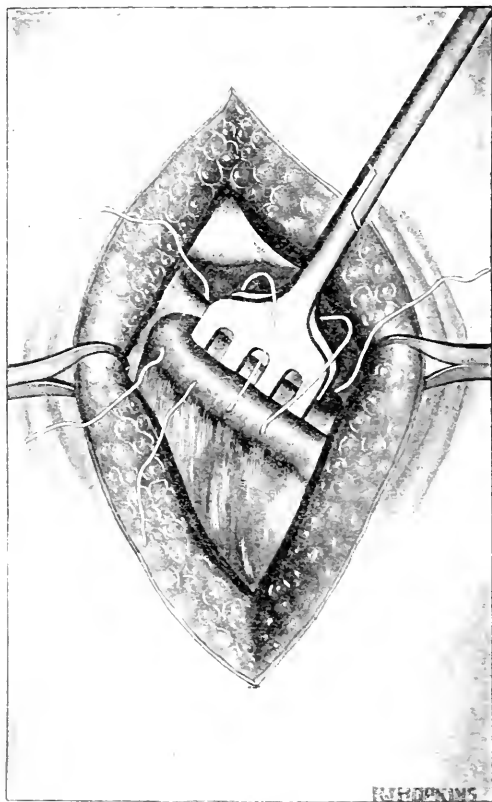


FIG. 2.—Suture in place, loosely, in order to permit the removal of the forceps.

the tissues are frequently wounded. The same accident is more liable to happen when volsellæ are used. While the accident is not a serious one, it is certainly not desirable. Then, too, the use of two hemostatic forceps for the purpose of effecting the fold makes the services of two hands of an assistant necessary. To obviate these objections, which, though

of minor importance. are still objections. I have devised a forceps with four flat approximating prongs, the whole being an inch across (Fig. 1). The prongs of the opposing blades approximate with sufficient force to hold the ligament, but not enough to induce tissue necrosis, while when approximated they

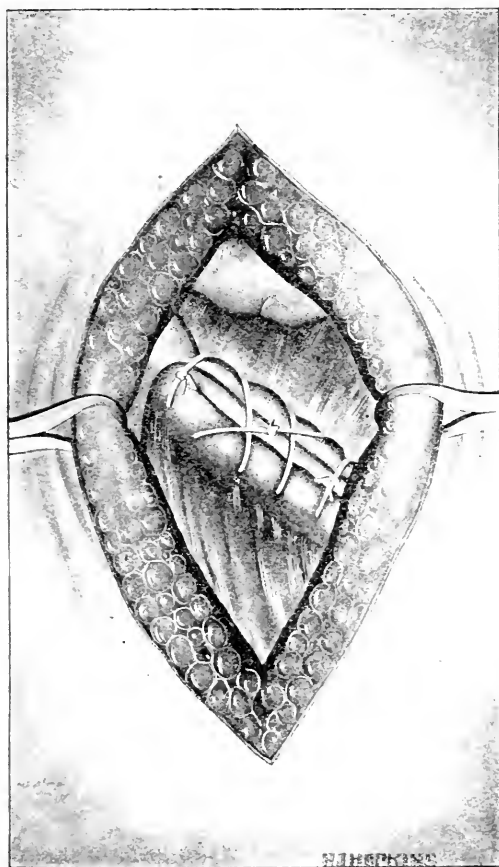


FIG. 3.—Sutures tied in Reed's operation for shortening the round ligament.

are far enough apart to permit the passage of a medium-sized needle between them (Fig. 2). The ligament, brought up into the field of operation on the finger, is seized in its middle third by this instrument, which is then turned half-around, thus effecting by a simple twist of the wrist the desired shortening of the ligament. It is then held in this position until all of the

sutures are applied (Fig. 3).¹ These are inserted as follows: one interrupted, one fixing the loop of ligament to the cornua of the uterus; a similar suture is utilized to fix the outer fold of the ligament; a continuous suture is then passed between the prongs of the fixation forceps, its ends being obliquely tied after the instrument is withdrawn.

A pathological condition that often exists in cases of long-standing flexions, and the persistence of which militates against the success of any fixation operation, consists in an atrophy of the concave wall and a hypertrophy of the convex wall at the point of flexure (Fig. 4). In many of these cases, particularly when associated with diffuse fibrosis, the elongated



FIG. 4.—Anteflexion. Dotted line shows wedge of tissue to be removed.

and hypertrophied wall offers a persistent resistance to the maintenance of the normal axis of the organ. To overcome this I have, for some time, removed a cuneiform segment from the hypertrophied wall—an operation which Thiriar calls *cuneohysterectomy*, and which is applicable in either anterior or posterior flexions. To do this the patient is placed in the Trendelenburg position. All adhesions between the uterus and bladder, or between the uterus and other organs, are carefully broken up, and rents in the serosa that may be induced thereby being carefully stitched. The uterus is then brought

¹ I am indebted to Messrs. D. Appleton & Company for the privilege of using the accompanying drawings from my forthcoming "Text-Book of Gynecology."

toward the incision by gentle but firm traction, and an ellipse of tissue about one centimetre wide, and having a length corresponding to the breadth of the organ, is removed from the convex side at the site of flexure (Fig. 5). Care must be taken not to carry this dissection into the cavity of the uterus, nor to wound either the circular artery or the anastomosing branches of the

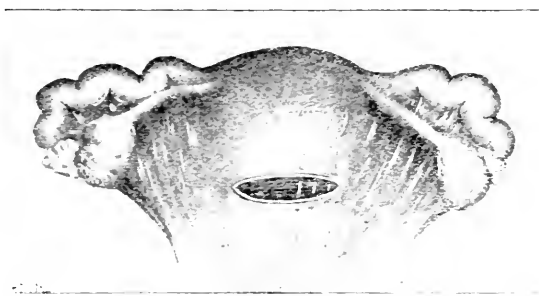


FIG. 5.—Ante-flexion; wedge removed and three sutures in place.

uterine arteries. Should the latter accident occur, it is best controlled by *en masse* ligatures passed deeply into the uterine tissue at either end of the yet gaping ellipse. Retraction of the vessels generally prevents their isolation and closure by direct ligature, which, when practicable, is always the preferable method. After all hemorrhage, except mere capillary oozing, is controlled, the margins of the ellipse should be carefully

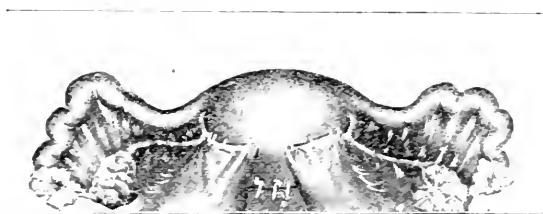


FIG. 6.—Showing broad ligament stitched to posterior surface of uterus.

approximated and closed by a continuous animal suture passed deep into the matrix. It may be well to fortify the continuous suture with two or three interrupted ones of the same material. The uterus is then dropped back, and, after pausing a moment to make sure of complete hemostasis, the abdomen closed without drainage.

A further modification of this operation that I have practised with satisfaction in antelexion consists in stitching a reef of the posterior folds of the broad ligament to either side of the posterior surface of the uterus (Fig. 6). I have been able by these combined methods to relieve the most distressing and persistent symptoms, vesical, uterine, ovarian, and neurotic, due to otherwise intractable antelexion of the womb.

ST. LEGER PLACE.

NOTES OF FOUR CASES OF PERFORATED GASTRIC ULCER,
WITH REMARKS ¹

BY

HENRY HOWITT, M.D.,
Guelph, Ontario.

MY experience with perforated gastric ulcer is too limited for me to attempt a paper covering the whole field. It is my object, therefore, to call your attention principally to some points which have impressed me as being important when certain conditions are present. The complications with which the surgeon may have to contend are very numerous, and if haply anything in this production throws a ray of light useful in the management of one of them, I am amply repaid.

In all four cases of perforation of the stomach by gastric ulcer have come under my personal observation. Two of them occurred years ago, before the technique of the operative procedure for it was commonly known, and they were treated in accordance with the custom of that time, with the invariable result—death. The other two are of more recent date, received surgical aid, and recovered.

The first one given in the notes below is a good illustration of how exceedingly chronic the progress of the ulcer may be, while the second shows how acutely and with what little warning it may lead to disastrous results. The third is an example of a perforated ulcer in which the complications are few and the operative technique comparatively easy, but the fourth is one having numerous complications difficult to master within a reasonable time.

¹ Read before the American Association of Obstetricians and Gynecologists, at Louisville, September 18-20, 1900.

CASE I.—R. M., married, age 34 years, a farmer who had retired on account of ill health, was admitted to St. Joseph's Hospital on the 14th of June, 1885. He had been healthy and robust until his twenty-fourth year, before which time he had never lost an hour through sickness. His direct family history was excellent, but distant relatives on maternal side probably died of tubercular disease.

At first the patient's symptoms were those of ordinary dyspepsia, but gradually in time he had attacks of intense gastralgia, which generally, though not always, came on about an hour after meals. The chief site of pain was a point a little below and to the right of the ensiform cartilage. The pain radiated toward the right, but never into the back, and when severe was of a burning or tearing nature. The attacks of intense suffering often lasted without a remission for hours, forcing the patient to resort to opiates. Vomiting was generally followed by marked relief, and the vomitus was always very acid. He had periods of comparative ease lasting for a week or longer, but never complete freedom from gastric disturbance. In spite of the various regular and irregular remedies, the remissions became less frequent and the attacks more severe and prolonged till he had to retire from his farm. In April of 1881 he had a severe attack of hematemesis. It left him very weak and he was confined to his room for six weeks and sustained by rectal enemata. Probably owing to greater care in regard to diet, for nearly a year the symptoms were less severe in character. Then, notwithstanding every precaution, the gastralgia slowly returned. A year before his admission to hospital regular attacks of vomiting became a marked feature of his case, and he began to decline in weight. Everything he took, no matter how bland, caused gastric disturbance.

On admission he had all the signs and symptoms of pyloric obstruction—viz., dilated stomach, constipation, small daily amount of urine, and sarcinæ and yeast fungi in what was ejected from stomach. Under treatment, consisting of daily lavage, strict regulation of diet, and small doses of strychnine, he began to make some headway: but two weeks after his arrival he was suddenly seized with a rigor, pulse rose to 130 and temperature to 103°, intense burning pain, and marked rigidity of upper portion of abdominal wall—in short, all the symptoms of local peritonitis. For three weeks he remained in a critical condition, then improved. He left the hospital

early in September very much improved, being able to take without discomfort solid food, provided the stomach was washed every other day, and he gained in weight rapidly. A year later he reported that he had only to use the stomach tube once or twice a week, had no dyspeptic trouble unless he partook of certain articles of food, and had gained forty pounds in weight. His condition remained good until the autumn of 1889, when he was suddenly seized with intense pain in epigastrium, followed by general peritonitis, and he died within twenty-four hours after the onset.

A postmortem revealed many old adhesions at and near pylorus, great thickening of the tissues of the parts, and a perforation of stomach on anterior wall close to pyloric valve.

Before he left the hospital I asked him, somewhat timidly however, to consider the advisability of submitting to an operation with the view of relieving the stenosis, and had he consented it is possible his life might have been prolonged. Certainly, with the knowledge of to-day, his chances would have been excellent.

The next case completely nonplussed me at the time, and there are features connected with it that are far from being understood by me at present. If similar cases occur, there is danger that even the most acute diagnostician may fail to diagnose before the opportune hour for action has passed.

CASE II.—Miss T., age 20 years, a prepossessing young woman, who had never been ill since childhood, and who presented every outward indication of health and vigor. She had lived all her life in the country and was no stranger to early hours and arduous work.

On the 27th of July, 1886, when assisting a relative who was indisposed, she had, in addition to ordinary duties during the afternoon, entertained a suitor for her hand. After the evening meal, while preparing her toilet for a proposed visit, she suddenly cried out as if in terrible agony, exclaimed, "I am dying!" and fell heavily upon the floor. A messenger was at once despatched for medical aid. On my arrival, an hour and a half afterward, she was sitting on a rocking chair, surrounded by the family and a number of excited neighbors, and swaying herself rather violently backward and forward; all the while she continued to exclaim: "I am dying!" Learning from the family how she had spent the day, being informed that she was menstruating, finding the pulse only 75 and the temperature normal, the conclusion at which I arrived was that we had merely to deal with a nervous explosion.

The family was told that there was no cause for alarm, that there was no necessity to summon her own people, and that in a short time she would be herself again. After prescribing the usual antispasmodics, I was about to depart when she ceased her swaying movements, turned toward me, and said in a calm, impressive manner: "*Doctor, I am dying.*" She was taken to her room, to which she walked, and I made a careful examination. Perhaps my mind was biased by the condition of her pulse and temperature and her general appearance. The examination revealed nothing further to me, except that there existed tenderness to pressure over left iliac fossa. All the while she continued to repeat the exclamation to which I have referred. There was no noticeable rigidity of the abdominal walls nor any vomiting. Being quite satisfied that her complaint was hysteria, the friends were advised not to show her too much sympathy. After my departure she became quiet and the family retired. No one had occasion to visit her room during the night. In the morning she stated that she felt better, sat up in bed and took a bowl of oatmeal porridge and milk, reached over and placed the empty bowl on a table near by, gave an agonizing scream, fell backward, gave a few gasps, and expired.

Postmortem six hours after death revealed milk and oatmeal free in peritoneal cavity, and a perforation near middle of posterior wall of stomach. The ulcer had smooth, glistening walls and was sufficiently large to admit the point of my index finger. The base of ulcer was partially covered with a veil of torn peritoneum. There was very little thickening of the parts around ulcer, and no evidence of peritonitis in abdomen. All the other organs of abdomen were normal.

In this patient when did the rupture occur, before my arrival or next morning after she had taken the porridge and milk? It is a moot question, for there are circumstances which favor both theories.

CASE III.—Miss E. H., age 15 years, an anemic girl, the daughter of a country hotel-keeper, was admitted to St. Joseph's Hospital on the 16th of February, 1898. For upward of six months she had presented many of the symptoms of gastric ulcer. She had vomited pure blood on several occasions, though never a large quantity at one time. The pain, which generally came on immediately after meals, was referred to the epigastric region, in which there was no particular site more sensitive than others. Owing to her environment she had had but indifferent attention, and, for the same reason, it has been

impossible to obtain complete notes relating to the early history.

At noon of the day previous to her admission she ate a more hearty meal than usual. A few minutes after leaving the table she slipped on some snow or ice, and immediately complained of severe pain in epigastric region, but the duration of the attack was brief. Half an hour later it suddenly returned with such intensity as to produce all the symptoms of severe shock.

Dr. W. J. Robinson was called and arrived four hours after the onset, and, though he found the temperature under the tongue normal, the pulse was rapid, the surface of the body pale and cold, abdominal walls rigid, and patient in agony. The pain was now referred to a large area around umbilicus. The doctor at once recognized the serious condition that existed and advised her removal to the hospital; but the night was cold and stormy, the roads almost impassable, the distance considerable, and the family averse to immediate action. He gave sufficient morphia to deaden the pain and requested to be informed of any change for the worse. He was called early next morning and found her symptoms very grave, and insisted on her removal, but it was late in the afternoon before this could be done.

That evening I saw her in consultation. She was certainly in a critical state and not a good subject for the only treatment that offered an avenue of escape. The symptoms were as described above, except that the temperature had risen to within a point of 102° . There was neither marked distension nor evidence of free gas in peritoneal cavity.

At nine o'clock, or thirty-two hours after the commencement of the attack, our preparations were completed. The stomach was siphoned and washed immediately before the patient was taken to operating room. On opening the peritoneal cavity a considerable quantity of cloudy serum escaped which had a decidedly sourish odor and which gave the characteristic acid reaction to blue litmus paper. The peritoneum was congested and the vessels of the anterior wall of stomach and gastrocolic omentum were greatly distended. A small perforation was found an inch above greater curvature near splenic end on anterior surface, to which a tag of omentum was loosely attached. On the tag and about perforation were patches of organized lymph: these were easily removed with sponge. There was very little thickening of stomach wall about ulcer.

The perforation, at least on peritoneal surface, was minute. It was closed with fine silk, which included peritoneum and part of muscular coat. The part was covered by attaching an omental flap. The peritoneal cavity was thoroughly flushed with saline solution and the abdominal cavity closed without drainage.

She was nourished wholly by rectal enemata for a week, after which time suitable food was gradually added by mouth. The after-history was uneventful, except that her recovery was prolonged by phlebitis of lower extremities, which set in about the fifteenth day. She left the hospital at the end of the sixth week. Since then her health has been good and her stomach has given her no further trouble.

CASE IV.—T. McC., age 20 years, born and brought up on a farm, was admitted to the Guelph General Hospital on the 19th of February, 1900. The paternal side of family history is excellent, but on the maternal side there is ample evidence to make sure that his mother has, and his grandmother has had, gastric ulcer, though in all other respects this branch is exceptionally good.

The patient when only 2 years of age began to have trouble with his stomach, and from that period of his life till his admission to the hospital he suffered more or less from gastric disturbance. The pain was generally more severe an hour after taking food. He always suffered more in winter than in summer. Up to late years there were periods of longer or less duration during the hot season in which he could take almost any article of ordinary food without much discomfort. Cheese, potatoes, and fruit especially that contained small seeds, caused more distress than any other nourishment. Attacks of severe gastralgia were of frequent occurrence; these were often relieved by vomiting. What he vomited was intensely acid, but never at any time contained blood.

For two years previous to his admission the attacks were more frequent and severe, there were no periods of entire freedom from gastric distress, and he had to limit his diet practically to raw eggs and milk. He described the pain as being of a burning character, and referred it to a small area below and to the right of the ensiform cartilage; when severe, it radiated toward the right, but never into back. Pressure over the part always caused pain.

It is well to note here that early in May, 1898, he had an

attack of appendicitis which necessitated a rest in bed for a week.

From the commencement of his gastric ailment I saw him occasionally at irregular intervals. He called at my office on the 10th of last February. On this occasion he had added to his former symptoms most of those peculiar to dilatation of the stomach from pyloric stenosis, including the splashing sound on palpation and the characteristic vomiting. He could not bear now the slightest pressure over the tender area to which reference has been made, and he was losing flesh rapidly. His face was pale and pinched, and body showed absence of youthful rotundity.

It was apparent that radical steps were urgently required in order to avert disaster, but his family feared to consent. During the night of the 18th he had an unusually sudden and severe attack, in which the pain, not only radiated toward the right, but also downward to the umbilicus. Subsequent events favor the view that at this time slight leakage of contents of stomach took place. He afterward stated that the pain now felt as if he had a bar of hot iron inside burning the tissues. From this date he was unable to take any nourishment by mouth without causing agony. Still the family hesitated to consent to operative measures, nor was I informed of the new developments.

At five o'clock in the morning of the 20th the pain suddenly became unendurable, and I was called and driven to the house, arriving there in less than an hour. The abdominal wall was as rigid as possible, surface of body cold and clammy, respiration superficial and quickened. He was lying prone upon his back and apparently afraid to move a muscle, and even when answering a question did not turn his head. I was somewhat puzzled, on taking his pulse and temperature, to find the former only 75 and the latter normal. The other symptoms, and the remembrance of Case 2 above, saved me from underestimating the true state of affairs. At the outset the chief site of pain was above umbilicus, on my arrival at cecum, and an hour afterward at pelvis. While preparations were being made for his removal to hospital, fully three grains of morphia were given without any apparent relief.

At half-past ten that morning he arrived at the hospital, by which time his pulse had risen to 120, his temperature to 101°, and the hepatic dulness had disappeared. His agony was so intense that he continually urged us to hurry with the neces-

sary preparations. Before taking him to the operating room the stomach was siphoned and washed. A quantity of dark fluid was removed from it. A hypodermatic of strychnia was given and the operation commenced an hour after his arrival.

The tension of the abdomen was so great that the tissues appeared to tear before the knife. The incision at first extended from near ensiform cartilage to umbilicus. On nicking the peritoneum, gas escaped with an audible sound, followed by a large quantity of fluid which to sight resembled the mixture of pus and serum which is frequently found in large abscesses of appendicular origin, but without the offensive odor. When the peritoneal opening was extended to the full extent of the incision, the whole field was occupied by the transverse colon, which was enormously distended by gas. The abdominal wound was enlarged so as to reach to within two inches of pubis, and an attempt was made to draw the colon out of the field, but this was found to be impossible. Finding that it was impracticable to proceed while this state of affairs remained, sterilized gauze was packed around the portion of bowel exposed and an incision fully three-fourths of an inch long was made in it. A large quantity of gas and some fecal matter escaped, and by the aid of the hand the entire colon was emptied. When the bowel contracted the cut was merely a small perforation, which was easily closed with a few silk sutures.

When the colon collapsed, the remains of a ruptured abscess cavity were exposed immediately below transverse portion, the walls of which were formed by coils of small intestines, colon, and omentum. The organized fibrin which bound these together was undergoing retrograde changes, for the adherent organs were readily separated and the patches for the most part were easily rubbed off, but some had to be pulled with fingers, and a few were too adherent to permit of this and were left. The small intestines and part of colon were now eviscerated and protected. This procedure exposed pools of pus, especially in flanks and pelvis, the latter being almost filled with it. After thoroughly cleaning the abdomen and pelvis with saline douche and gauze sponges, attention was directed to the stomach, which was now examined under very favorable circumstances, for we had relaxed walls and sufficient room in which to work.

A perforation was found, apparently on anterior surface of pylorus close to valve, the calibre of which readily admitted

my little finger. To me it appeared as if the internal opening commenced at the stomach side of the valve, then tunnelled obliquely toward the right and emerged on surface of pylorus. It was difficult to determine its true situation, owing to the greatly thickened and altered state of the parts. The walls of the ulcer were smooth and glistening, and the pylorus and adjacent portion of stomach were very much thickened, nodular, and dense. To touch and sight the part exactly resembled that produced by carcinoma in this region. There were numerous adhesions, which rendered the pylorus but slightly movable. Notwithstanding the stomach had been recently washed, dark, grumous fluid oozed through the perforation when any pressure was made on it.

The walls of ulcer and surrounding tissues were too dense to permit of the aperture being closed with sutures. An elliptical section an inch and a half in length, running in the long diameter of the part and having the ulcer in its centre, was removed. The wound was closed with two rows of interrupted sutures and covered with an omental flap. The peculiar course of the ulcer and the contour of surface would not permit of the section being made in any other direction.

Gastro-enterostomy was now a necessity. The upper portion of jejunum was brought up, and, after allowance had been made for all possible movements without producing tension of proximal arm, it was attached to anterior surface, an inch above the line of greater curvature and at a respectable distance from the changed tissues of outlet, by means of a Murphy button. The button, contrary to general advice, was supported by a row of interrupted silk sutures. Now, here is a procedure to which I desire to direct attention, for it is my opinion that it will overcome several untoward effects that have hitherto frequently proved detrimental after gastro-enterostomy. The proximal arm was made fast with a few sutures to the stomach, an inch or more to the right and a little above line of button. This does away with the usual acute angle in bowel, prevents contents of stomach from entering upper arm, and favors the current from latter following the natural channel.

Before the bowels were returned to abdomen, each flank at the back and the lower abdomen at the outer side of right rectus muscle was pierced and rubber tubes inserted. The tube near pubis reached to the bottom of pelvis. The abdominal wound when closed was dressed with dry sterilized gauze

and sealed with collodion to prevent infection from discharge of tubes.

Naturally the shock which followed was severe, the pulse at one time reaching 160, but the application of heat and injections of strychnia and normal saline solution carried him through. At one time toward the middle of the second day his temperature rose to 101.2° , which is the highest point recorded on his chart. By the fourth day both temperature and pulse were normal, and afterward, in spite of a serious accident, remained so. No vomiting occurred. For the first week, except an occasional sip of water and the fluid part of oyster broth, he was nourished wholly by rectal enemata; afterward suitable nutriment was gradually added by mouth. The drainage tubes proved to be of service, for the amount of discharge was considerable, especially from the one in the lower abdomen. They were all removed by the fifth day. For a time the discharge had an offensive odor.

The sealed dressing was opened on the seventh day, when the wound looked so well that all the sutures, except two at umbilicus, were taken out. Three hours later the patient had a fit of sneezing and tore the wound open from upper angle to umbilicus. The contents of abdomen protruded, exposing the site of anastomosis. Fortunately the nurse in charge at once grasped the needs of the situation, removed the dressing, and covered the exposed parts with gauze wrung out of hot normal saline solution. An hour after accident I closed the wound without anesthesia, and no ill effects followed.

He went home on April 14, gained rapidly in weight and strength, and in a short time was at work on the farm. He spent the greater part of June at our artillery brigade camps, acting as despatch carrier for one of the commanding officers, and spent hours each day on horseback.

Since the operation, although he has been as careless as possible about his diet, he has never had the slightest symptom of his old trouble. The other day, in answer to a question, he said, "I can eat any mortal thing." He has had two severe attacks of colic in cecal region, lasting on each occasion only a few minutes and then suddenly passing off. The button has never been seen, and whether these were produced by it at cecal valve or by other causes is a matter yet to be solved. The X-rays would easily decide.

I have thought it well to limit my remarks to the headings given below. They are six in number: the two first relate

to phases of the subject before perforation takes place, and the remainder to certain conditions that may arise from its occurrence.

Do Symptoms before Rupture Indicate the Site of Ulcer?—Undoubtedly not always, for there are cases in which literally none exist. They do, however, when the ulcer is situated at or near the pylorus, provided the progress is not unduly acute. My notes tend to indicate that when the situation is on the anterior surface adjacent to the outlet, no matter how intense the pain may be, it never radiates into back, but often toward the right, and that pressure below and to the right of ensiform cartilage produces pain. It is natural to infer that an ulcer in the same situation, but on the posterior wall, will be less sensitive to external pressure and the pain tend to radiate into back. In both instances, when encroachment is made on the lumen of the pyloric orifice, we have in addition almost if not positive indications as to the situation. Besides these, we have also in the early stage the time that elapses after food is taken before disturbance arises. If the pain be aggravated immediately food is taken, the natural inference is that the trouble lies near cardiac orifice. Other situations of the ulcer cannot be definitely ascertained by symptom.

What Conditions Justify Operative Measures?—No surgeon of experience in abdominal work should for a moment hesitate to advise early operative measures before perforation to a patient who has symptoms similar to those recorded in Cases 1 and 4, nor should he act otherwise when a patient has frequent and prolonged attacks of gastralgia accompanied with vomiting, especially if there be a history of hematemesis.

AFTER PERFORATION. *The Danger of being Misled by Pulse and Temperature.*—There are many instances on record in which the true condition of affairs in abdominal troubles in the early stage have been overlooked by the medical attendant trusting too much to the pulse and temperature. This is more apt to take place when shock is a factor. My second and last cases fairly well illustrate how readily a mistake may be made when these are given undue prominence in summing up. The absence of increase of temperature is not difficult to understand, nor should the state of pulse be, when we call to remembrance that in shock from abdominal injury it may at first be slow. We can comprehend how an error may be made if the doctor arrives at that stage when both are practically normal. The less a medical man trusts to them in this particular line

and the more to other signs and symptoms, the fewer mistakes will happen in his practice. They are, however, important when taken in connection with the other symptoms and recent occurrences.

A week ago to-day I was called to see a stout lady who had, three hours previously, fallen heavily on the edge of a high milk can, which caught her across the upper and left side of abdomen. There was no external evidence of the injury, her pulse only 75 and its qualities good, but the thermometer under tongue would not rise over 95°; and this fact, together with rigidity of abdominal walls and general appearance of patient, determined us to operate. In the interpretation of the symptoms at the consultation held previously, internal hemorrhage was excluded as being an impossible complication. Now mark our infallibility!!! The abdomen was found filled with blood, the source of which was a rent in the spleen.

The Advisability of Enterotomy and Evisceration in Certain Conditions.—When the intestines are distended with gas or liquid fecal matter, especially when the site of trouble lies deep and room is required to carry out the necessary steps of the operation, I am a firm advocate of enterotomy and evisceration. It is impossible to work to advantage when the abdominal tension is great, and these procedures at once change the whole aspect and give us flaccid walls and ample room.

Distension of the colon only requires one opening to collapse it, but when the distension is great and confined to the small gut two or more punctures may be required. It is well to close each one before making another, because it is difficult to protect two at the same time. In a patient of mine no less than four enterotomies were required, yet no ill effects followed. It has been resorted to frequently in my practice for over ten years, and always with beneficial results. The opening becomes a small puncture when the bowel contracts, and is easily closed with a few sutures. Permit me to quote from a paper which I read before the Trinity Medical Alumni Association of Toronto in April, 1898, on "Intestinal Obstruction": "The advantages claimed for this procedure are not by any means confined to the improvement of the field as regards room in reaching and dealing with the cause of obstruction. It removes the tension that leads to impaired circulation in the parts, renders functional activity again possible in the important organs affected, gives the over-distended muscular coat

time and opportunity to regain tonicity, and, what is worthy of note, removes from the system offensive, effete matter and myriads of pathological germs."

Evisceration of the bowels or a portion of them is important when, as is not infrequently the case in operative work for gastric ulcer, the part lies deep and adhesions prevent it being brought up. Many speak against exposure of the intestines, but to me there is far less danger in pulling them out and protecting them with sterilized gauze, which is kept warm by irrigation, than by the continual handling necessary to keep them out of the field. In a case of perforation of stomach with escape of contents, all parts of the abdomen are quickly invaded by septic material. It is incomprehensible to me how the toilet may be done without resorting to it.

When Gastro-enterostomy is required, the Method of Doing it.—The function of the pylorus, both in gastric and duodenal ulcer, is not unusually more or less impaired, either by inflammatory products or by the contraction with which the healing process is attended. Adhesions and the desperate state of the patient place pyloroplasty and pylorotomy out of the question, and we have to resort to gastro-enterostomy after closing the perforation. No method known to me has so many good qualities as that advocated and practised by our talented and distinguished Fellow, Dr. J. B. Murphy, of Chicago.

By stitching the proximal limb of gut, as done in Case 4, the acute angle at button is overcome and, I believe, undesirable effects avoided.

Posterior gastro-enterostomy has probably given better results than anterior, but occasionally circumstances will arise in which either adhesions or the element of time will compel us to adopt the latter.

The Necessity of Injecting a Nutritive into Jejunum and a Cathartic into Colon during Operation.—As a general rule, our patient, before perforation takes place, by reason of long-continued suffering and inability to retain food in stomach, is not only reduced in weight, but has all the vital powers at a very low ebb. Then, too, for days after the operation no nutriment can be given by mouth, and that administered by rectum is too slow of action to be satisfactory in supporting life through the shock which follows. Besides, from long use for such purpose, the rectum may have become so irritated as not to retain anything. For reasons which are evident, constipation is not uncommonly a factor, and in

regard to it also ordinary methods of relief are out of the question.

Any device by which sufficient nutriment may be quickly introduced into the active portion of the alimentary canal to tide the patient through a critical period cannot be otherwise than beneficial and therefore necessary. The beneficial effect of an active fecal circulation in the canal after intra-abdominal operations is an admitted fact. Then the same argument holds for a procedure which will accomplish early fecal evacuations. Both procedures may be accomplished in a few minutes in course of an operation, by means of an apparatus like that used for introducing normal saline solution, only the needle should be of greater calibre.

Last August it was my lot to be called upon to operate for gastric ulcer before perforation under exceedingly unfavorable circumstances. The patient, a young lady, was worn out by almost continuous retching, severe pain, and loss of sleep. Nothing had been retained on the stomach for over three weeks, and no food given for over two except by rectum, and the latter avenue had been impracticable, owing to irritability, for some days. A pint of peptonized milk was injected into upper portion of jejunum and an ounce and a half of sulphate of magnesia in solution into ascending colon. Though the patient was lost through an untoward event, the beneficial effects of the procedures were so evident that, should I meet with corresponding conditions in future, they will be considered not merely advisable, but an essential part of the operation. It is my belief that in at least a limited number of abdominal operations one or a combination of both procedures may so govern the result as to ward off death.

235 WOOLWICH STREET.

THE DIAGNOSIS OF ECTOPIC PREGNANCY BEFORE RUPTURE, BASED ON ELEVEN CASES.¹

BY

J. F. BALDWIN, A.M., M.D.,

Surgeon to Grant Hospital; Fellow of the American Association of Obstetricians
and Gynecologists, etc., Columbus, Ohio.

"No authentic description exists of an unruptured tube-pregnancy" (Lawson Tait, "Diseases of Women," 1889, page

¹ Read before the American Association of Obstetricians and Gynecologists, at Louisville, September 18-20, 1900.

451). "I defy anybody to have diagnosed such a case beforehand, for the woman had not even missed a period" (*ibid.*, page 452).

Our real working knowledge of extrauterine pregnancy dates back only about twenty-five years. Previous to that time deaths were reported from so-called accidental hemorrhage into the peritoneum, and also deaths from intraperitoneal and extraperitoneal hematocele. Many cases had been reported of fetuses found in the abdominal cavity and of lithopedions found many years after the pregnancy from which they dated their origin, but it was not until twenty-five years ago that from a careful study of these cases, and as the outgrowth of these late diagnoses, data were arrived at from which we derived accurate knowledge of the pathology of ectopic gestation.

While, a few years ago, the rank and file of the profession could not but regard as extraordinary the diagnostic acumen of the men who could make the diagnosis of tubal pregnancy on the occurrence of rupture, at the present time, with the increase of literature on this subject and our better knowledge of its symptomatology, intelligent physicians everywhere expect uniformly to make a correct diagnosis on such occurrence. The sharp, colicky pains, the syncope and the collapse, at once attract attention and point almost unerringly to the diagnosis. But a diagnosis deferred until rupture has occurred necessarily results, in a large proportion of cases, in being but the mere preliminary to a fatal termination. The patient may be far removed from surgical assistance, and death may occur long before such assistance can be obtained.

With our present knowledge on this subject, I believe it is now possible, in a fairly large proportion of cases, to make a diagnosis of tubal pregnancy before the occurrence of rupture. This statement, I know, is in direct contradiction to statements made by Mr. Lawson Tait in his published writings of 1888 and 1889; but the profession at large knows much more of ectopic pregnancy now than it did ten years ago, when Mr. Tait reported that he had seen but one case of ectopic pregnancy before the period of rupture, and in that did not make the diagnosis at the time of the examination, but found the ruptured cyst three days later at the operation, which had been made imperative on account of the supervention of alarming symptoms.

It is true that in many cases of tubal pregnancy no symp-

toms occur which lead the woman to suspect that anything is wrong, least of all to consult a physician, until the occurrence of alarming symptoms due to rupture and the resulting hemorrhage. Nevertheless there are unquestionably very many cases in which symptoms do arise, and in which a physician is consulted, and in which a presumptive working diagnosis is clearly possible.

There are no pathognomonic symptoms of tubal pregnancy or of any other form of ectopic pregnancy. Usually, however, we find the following points: The patient gives a history of several years of sterility (many exceptions); she has missed a menstrual period, perhaps two of them (numerous exceptions); she has noticed some unusual pains in the pelvis, which she will probably describe as boring, griping, or colicky in character, these pains being situated usually in the region of an ovary; she has perhaps, within a few days of the time of consulting her physician, had a more or less irregular hemorrhage; perhaps has discharged pieces of membrane which she supposed indicated an abortion, and consults her physician with the idea that such is the case, owing to the hemorrhage and the pain and the suspicion of an existing pregnancy. Possibly, however, there has been no suspicion of a pregnancy, as the woman has accepted her sterility as incurable and has dismissed from her mind such a possibility.

On making a vaginal examination, if the conditions are at all favorable the examiner will find upon one side or the other of the uterus, or back of it, a fusiform, quite well-defined cystic tumor of about the size of a pullet's egg or a little larger. This tumor will probably be quite tender on pressure, will be quite symmetrical in outline, and will usually be distinctly pulsating. When such a tumor is found in a woman in whom we have reasonable grounds to suspect a pregnancy; when the uterus at the same time is found somewhat enlarged and having the feel of pregnancy, but not enlarged as much as we would expect in a pregnancy of so long continuance as the history indicates, a presumptive diagnosis of tubal pregnancy is warranted, and the matter of an operation should be carefully and without delay considered.

There are a few conditions which give us the same kind of a tumor as is found in these cases. These conditions, however, are seldom accompanied by the other symptoms which have been enumerated, and are in themselves such as to warrant, if not to demand, operative intervention. An enlarged

and adherent ovary in Douglas' cul-de-sac cannot, perhaps, be differentiated from a tubal pregnancy in the same location. An old pyosalpinx, a hydrosalpinx, a small cyst of the broad ligament, or an enlarged ovary in its normal location might be mistaken for an unruptured tubal pregnancy. It is not likely, however, that any of these conditions would be accompanied by symptoms pointing to an ectopic pregnancy, and yet they may; but all these conditions are such as to justify operative interference. If the operator, suspecting a tubal pregnancy, finds a pus tube, as I have twice done, or a cystic ovary, he has certainly benefited his patient by their removal; while if he finds an unruptured tubal pregnancy he has, by a very safe operation, saved his patient from the gravest of dangers. In other words, he has performed an operation the mortality of which in experienced hands is almost *nil*; while the mortality of ruptured tubal pregnancy, while necessarily unknown, is certainly frightful.

In order to render the early diagnosis of ectopic pregnancy possible, it is necessary for physicians to learn to suspect it and to examine with that suspicion in mind. The physician who, without making any examination, tells all middle-aged women who come to him complaining of irregular hemorrhages that they are merely having the change of life, will not likely make an early diagnosis of cancer of the uterus, and he will probably tell patients who come to him with symptoms of ectopic pregnancy that they are merely threatened with a miscarriage. He will make no further investigation, and will hence uniformly fail to make a diagnosis. The physician, however, who, having in mind the possibility of an ectopic pregnancy, thoroughly examines all patients whose history and symptoms point to this condition, will, in a large proportion of cases, make a correct diagnosis and by prompt intervention will achieve a signal triumph for himself and his profession.

Menstruation.—One menstrual period, perhaps two, has ordinarily, but *not always*, been missed, or the last menstruation was in some particular irregular. There has occurred, perhaps, a dribbling of blood, but not a normal flow. There may have been a discharge of clots, or possibly a decidual membrane resembling the membrane passed in an early miscarriage. If such membrane can be obtained, microscopical examination showing the absence of chorionic villi would render a diagnosis positive; but these membranes have usually been destroyed.

Sterility.—Not too much stress should be placed upon the previous sterility of the patient. This should be taken into account in a summary of the symptoms, but it is not of much moment, since in many cases there has been no such previous history.

Pain.—The pain of a tubal pregnancy is usually sharp and colicky in character and quite distinctly localized on one side, or it is of a dull, boring, constant character—a steady, severe ache. The pain in the one case is due to the internal stretching, with slight giving way, of the peritoneal investment of the tumor. In the other, the pain is due to the constant tension of the tumor walls, but without as yet any local yielding. The sharp, colicky pain is therefore very apt to succeed the other in point of time. The pain may be very severe, so severe as to result in some acceleration of the pulse during its continuance, but there is no elevation of temperature. Possibly the pain may be so severe as to result in fainting, but faintness is rather a symptom of at least partial rupture with some hemorrhage.

A woman who consults her physician presenting these symptoms, or several of them, should be at once carefully examined with the idea in mind of a possible tubal pregnancy. If that examination reveals a tumor such as has been previously described, the presumptive diagnosis of tubal pregnancy should be made and an operation unhesitatingly advised. The remote possibility of a mistake in diagnosis should be explained to the patient or her friends, but there should be no hesitation in urging an immediate operation. A slip, a misstep, any sudden alarm even, may in a moment precipitate rupture with all its unfortunate consequences.

At the Atlanta meeting of the American Medical Association (1896), in a discussion on this subject in the section of Diseases of Women, I reported five cases in which I had made the diagnosis and had operated on tubal pregnancy before rupture. (Two of these cases occurred in the same patient at an interval of eight months.) I believe I was the only one present who had ever made such diagnosis and had so operated. Since that time, however, a number of such operations have been made, and I think there can be no doubt that the time has come when such cases will be reported with increasing frequency until the diagnosis in suitable cases becomes recognized as an essential duty of the well-qualified practitioner.

This preliminary presumptive diagnosis must be made by

the family physician. It will later be verified by the surgeon, but the early diagnosis of ectopic pregnancy, like the early diagnosis of uterine cancer and of appendicitis, must depend upon the education of the family physician.

The following six cases have occurred since the five which I reported in 1896:

CASE VI.—April 24, 1898, Mrs. S., age 22; married two years; never pregnant; menstruation always regular. Menstruation came on at the usual time five weeks ago, but came on and has continued up to the present time merely as a dribbling of blood. Has always enjoyed excellent health. Knows of no reason for not becoming pregnant. Has been having a feeling of weight and bearing-down in the pelvis, with a constant aching sensation which she locates in the womb. Vaginal examination shows the uterus somewhat enlarged and pushed forward toward the pubes by a mass in Douglas' cul-de-sac. This is elastic, smooth in outline, somewhat tender, but without general pulsation. As there has been no history of any trouble prior to the last menstrual epoch, the probability of a tubal pregnancy seemed great, and an exploration through Douglas' cul-de-sac was advised. This was made two days later, and revealed a greatly distended tube without rupture, but with some free blood in the cul-de-sac, the hemorrhage having come from the open end of the tube. The specimen removed revealed a pregnancy estimated at about six weeks' duration.

CASE VII.—December 8, 1898, Miss McD., age 24, servant. Had one miscarriage at three months two years ago; no other pregnancies. Has not been entirely well since the miscarriage. Denies having had any pelvic disease; no dyspareunia. Was unwell regularly and normally two and one-half weeks ago. Complains of pain and bearing-down in the pelvis and back. Pains somewhat like labor pains came on just before the last menstruation and have continued ever since. Has had no nausea. Has had no intercourse since menstruation. Vaginal examination shows a very tender mass back of the uterus, the size of a pullet's egg. This mass is excessively tender. She is positive that this tenderness has existed but for a very short time. Pulsation is distinct. The right ovary can be outlined; the left ovary also, but very indistinctly. The diagnosis seems to lie between a pus tube, which her history negatives, and a tubal pregnancy. Operation through the vagina December 10. The right tube was found in Doug-

las' cul-de-sac, being held there by light adhesions. It was removed without difficulty and the entire specimen turned over to the pathologist for examination. He reported later that the specimen was that of a very early tubal pregnancy. Impregnation in this case probably took place just before her last menstruation. (Saw a moribund case, some years ago, in which fatal rupture of a tubal pregnancy had occurred in a prolific multipara three weeks after the cessation of a perfectly normal and regular menstruation, and without the slightest suspicion of a possible pregnancy in the mind of the patient.)

CASE VIII.—May 5, 1899, Mrs. K., age 24; married four years; had a miscarriage during the first year of married life; no pregnancies since. Menstruated naturally, commencing on the 20th of March. Had always been very regular, and expected to menstruate April 18. The flow did not come on, however, until the 28th; continued for about five days, then stopped one day, then recommenced, and has continued as a mere show up to the present time. During this time she has had more or less pain in the right side of the pelvis. This pain was described as "cramping" in character. Has never had the slightest irregularity in menstruation before. Examination shows the uterus retroverted and adherent. Back of it and low down is a tender, cystic mass the size of a small hen's egg. This is also adherent. She is sure that this tenderness could not have been there but a very short time. Diagnosis of a tubal pregnancy was made and an operation advised and made the next day per vaginam. The tube above the sac was ligated with catgut and the sac easily removed. Examination of the specimen verified the diagnosis.

CASE IX.—August 22, 1899, Mrs. S., age 37; mother of five children, the youngest 3 years of age; was unwell last from the 20th to the 25th of June; has had no show since. Several times during the last few weeks has experienced cramping sensations in the abdomen, more marked on the left side. Four days ago was taken with severe pain in the lower abdomen and sent for Dr. Mayhugh, her physician. He found a tender mass on the left of the uterus, the exact character of which he did not understand, but which led him to suspect ectopic pregnancy. Pain still continues, but is less severe. On examination I found a well-defined mass to the left of the uterus, the uterus itself pushed over to the right. Could not detect pulsation. From the character of the mass and the history, concur in the previous diagnosis of ectopic pregnancy

and advise immediate operation, which was made the next day. On opening the vault of the vagina, found some blood which had extruded from the open end of the Fallopian tube. The tube itself was distended to the point of bursting by the embryonic mass. In drawing the tube down into the vagina to effect its removal it was torn off near the horn of the uterus. The hemorrhage following the tearing was not very great, but it seemed best to secure its effectual control by opening the abdomen. This was done and the operation completed without any difficulty. Examination of the tumor revealed placental tissue and a very minute embryo. (This patient became pregnant normally in October and was safely delivered at full term.)

CASE X.—March 27, 1900, Mrs. S., age 30; mother of four children, youngest 2 years of age; no miscarriages; no history of any pelvic disease. Should have menstruated ten days ago, but had merely a show at that time. It came on freely, however, a week later, and there is still some dribbling; no clots. Commenced having pain in pelvis a week ago, but had severe pain in the right side of the pelvis and epigastrium two weeks ago. Still has pain in the right side; this spot is "sore." Has never had any such disturbance as this before. On examination, find a tender, pulsating mass just back of the uterus and to the right, continuous with the uterus; is very tender; pulsates indistinctly; about the size of a hen's egg. Diagnosis of tubal pregnancy seemed plain. Operation, made the next day, showed an ectopic pregnancy in the right tube, which was in Douglas' cul-de-sac and adherent. While breaking up the adhesions the sac ruptured, and the embryo was lost in the moderate hemorrhage which followed. Microscopical examination confirmed the diagnosis.

CASE XI.—May 19, 1900, Mrs. W., age 26; mother of one child, age 3 years; no miscarriages. Patient has always menstruated regularly and normally, the last time being March 1. Some time after this menstruation she commenced having pains in the pelvis, especially on the right side. These have persisted until the present time, but have been much worse of late. She consulted her family physician, Dr. Dixon, some two weeks ago, and he at once suspected the possibility of an ectopic pregnancy. She declined an examination and passed from observation. Yesterday and last night she suffered with intense pain, and he was again called. On examination he found a condition of affairs confirmatory of his previous sus-

pitions. Her pulse is good, but she complains of feeling short of breath and of pains resembling those of angina pectoris. Patient is quite fleshy, with thick abdominal walls; nevertheless an indistinct mass can be made out on the right of the womb. This is quite tender, but without any distinct pulsation. There was no tenderness in this region previous to this sickness. Advise that patient be prepared for an operation, an anesthetic be given, and, if examination confirm the suspicion of ectopic pregnancy, an immediate operation be made. The patient was at once transferred to the hospital and this procedure carried out. The examination under the anesthetic abundantly confirmed the previous suspicion. As the mass was higher up than usual in the pelvis, the operation was made by the suprapubic route. Some blood had escaped from the fimbriated extremity of the tube, but the tube itself had not ruptured. Examination of the specimen verified the correctness of the diagnosis.

ERRONEOUS OBJECTIONS TO BILATERAL INGUINAL CELIOTOMY AND SHORTENING OF THE ROUND LIGAMENTS VIA THE DILATED INTERNAL INGUINAL RINGS, AND ITS SUPERIOR ULTIMATE RESULTS IN SIMPLE AND COMPLICATED ASEPTIC RETROVERSIONS OF THE UTERUS.¹

BY

A. GOLDSPOHN, M.D.,

Professor of Gynecology, Chicago Post-Graduate Medical School; Senior Gynecologist to the German Hospital; Attending Gynecologist to the Post-Graduate and Charity Hospitals of Chicago.

FOR a detailed statement of the technique of this operation and its *rationale* the writer respectfully refers the reader to his articles in the following issues of journals in which it has been given: *American Gynecological and Obstetrical Journal*, February, 1898; *New York Medical Record*, October 8, 1898; *AMERICAN JOURNAL OF OBSTETRICS*, vol. xli., No. 5, 1900.

The salient points in his technique and some of the reasons for them are the following:

1. Distinct exposure of the real (and not merely the appa-

¹ Read before the American Association of Obstetricians and Gynecologists, at Louisville, September 18-20, 1900.

rent) external abdominal ring and grasp of its contents in a forceps, as the most important and useful key to the finding of the round ligament.

2. Abstaining from all cutting of tissues after that, with minor exceptions. The aponeurosis of the external abdominal oblique muscle is never cut, but always split open bluntly in the direction of its fibres, outward and in more of an upward direction than is the course of the inguinal canal. The inconvenience of this is merely apparent, for the lower edge of the severed aponeurosis is readily drawn down or everted by means of a forceps, and good access to the inguinal canal is thus obtained. This sacrifices none of the future holding capacity of this most important structure. It affords a broader and better surface posteriorly against which to anchor the round ligament, along with enough of the internal oblique and transversalis muscles to occlude the canal and make hernia impossible, and the severed edges of the aponeurosis are thereby permitted to fall into exact apposition again, because nothing comes in between them. They are exactly reunited, and the lines of union of this and the preceding (second) layer are not parallel nor over each other, which is of value because these two layers, in the Bassini procedure, have everything to hold. It is equally uncalled for to incise the internal abdominal ring, because an opening from 3 to 5 centimetres is usually obtained easily by stretching it with fingers or a forceps, beginning with the small opening in the peritoneal envelope of the ligament, that is always made by stripping it back if the ligament, in any simple Alexander operation, is at all properly shortened. Thus no more sacrificing of these structures is made in the writer's addition of intra-abdominal work to the Alexander operation than is made for the latter alone. Again, the opening mentioned is sufficient for the intrapelvic work intended, because the internal abdominal rings are just in front of the normal location of the ovaries and ampullæ of the tubes; wherefore these structures and the posterior surface of the uterus are as easily reached by this route with one finger through a one-inch opening as by two fingers introduced through a two-inch incision in the linea alba midway between the symphysis pubis and the umbilicus. Moreover, as the inguinal opening is exactly in front of the antero-lateral wall of the pelvis—the normal location of the ovary—it and the abdominal end of the tube can be drawn into or out of the dilated

internal ring more naturally and with greater facility than into or out of any other abdominal or vaginal opening whatsoever. The highest degree of fine and exact work in salpingostomy, resection of the ovaries, and shortening of the most important and delicate support of the ovary, its lateral suspensory ligament (ligamentum infundibulum pelvicum), can all be made most readily from this approach. Such delicate work upon these structures is utterly impossible by any vaginal route (which induces descensus of ovaries, but can never cure it); and if such work upon these delicate organs is to be done via the linea alba without doing violence to their lateral supports, and if these important supports are to be made short enough to hold the ovary, etc., in its *only natural* position, against the antero-lateral wall of the true pelvis, then the incision in or near the linea alba will have to be a long one and necessarily involve much exposure of serous surfaces and travelling over intestines in order to deal properly with the structures upon the lateral wall of the pelvis.

The celiotomy feature in conjunction with the Alexander operation, to the extent of dilating the opening in the peritoneum and the internal ring sufficiently for exploration of the internal organs by means of one finger, is advantageous on each side of all simple cases, and is necessary in all complicated cases, for the following reasons:

1. To prove that the round ligament really pulls from the uterus when it has been shortened apparently *ad maximum* by extra-abdominal dissection and traction, and not from the middle or outer half even of the broad ligament, as is the case in about two-fifths of all round ligaments in even simple movable cases. This fact probably explains the singular observation of Krönig and Feuchtwanger¹ in two cases of extreme retroversioflexion, in which moderate traction upon the round ligaments anteverted the uterus, but severer traction threw it over backward.

2. Exploration within is necessary to find out obscure fixations and degenerate conditions in or upon the adnexa, that are far more frequent than real adhesions to the uterus itself, and can frequently not be discovered by the most careful and skilled examinations. These have often vitiated the results, as to perfect health, after the simple Alexander operation heretofore, and will continue to do so, especially when no more thorough work is performed than that which is proposed

by operators who speak in favor of one-inch incisions; of not opening the inguinal canal; of not opening the peritoneum, and similar vagaries of superficiality.

3. To extend also to the much larger category of adherent and otherwise complicated retroversions, in probably fruitful women, the greatly superior good of treatment by shortening of round ligaments approximately in their natural channels, which is the only procedure that has so far been proved to be able or likely to cure their displacement for life, *i.e.*, not merely until their next baby comes—as a temporary make-shift—but also after successive subsequent labors at term.

The wound is closed in four layers, of which the second and third are of chief importance, as before mentioned. In the first layer the edges of peritoneum and margins of the internal ring are caught in a puckering-string suture which closes that opening. In the second layer the internal ring just closed is covered over, and the canal is closed by liberal masses of muscle tissue from the internal oblique and transversalis, by means of from five to seven continuous catgut stitches taken from the extreme outer angle of the cleft in the aponeurosis successively inward to near the pubic spine. The first two or three of these stitches are taken laterally from the point of emergence of the round ligament and reinforce the abdominal wall over the closed internal ring; but by each of the remaining three to five stitches toward the median line, the round ligament is pierced at about its centre and becomes placed as in a sandwich between the elastic and vascular muscle tissue and the posterior surface of Poupart's ligament, and it is thereby secured from strangulation. Three very important things are obtained by this technique in the second layer; (*a*) the ligament is broadly anchored against Poupart's ligament as an unyielding object, without compromising the continuity of the aponeurosis, as happens when the ligament itself is used as a suture in closing the aponeurosis; (*b*) the roll of elastic muscle tissue in each stitch secures the ligament from strangulation; (*c*) the internal ring and the inguinal canal are so closed and reinforced in such a manner as to make hernia quite impossible. The abundance of tissues available in these cases, and the liberty with which we can sew them in a woman, where there is no spermatic cord to look out for, makes hernia certainly a most rare sequel of this operation in normal hands, and when it does occur it must be charged to the operator and not to the operation. Krönig and Feuchtwanger (of Prof. Zweifel's

clinic) report two small herniæ in 136 inguinal sections. J. Schultz² (Prof. Kümme, Allgem. Krankenhaus, Hamburg) found not even the slightest weakness or approach of a hernia in any of his 54 cases that were carefully examined; Rumpf³ (Berlin), not any sign of hernia in 60 cases examined, aside from a number that reported by letter, and he believes it safe to assume that there is no hernia in any of his cases. Edebohls⁴ had a hernia develop in both wounds of one patient out of 106 that were examined. The writer has one impending hernia to record—in a patient who slid down an icy stairway upon her buttocks five weeks after operation—out of 123 patients, of whom he or other physicians examined 101 cases over a year, on an average, after operation, and the remainder sent reliable reports by mail or by messengers. Furthermore, all operators who have any extended personal experience with the Alexander operation of *to-day* are unanimous in the opinion that hernia does not *now* follow this operation in qualified hands (say such as can operate for hernia effectually), except as rare and accidental occurrences, and all assertions to the contrary are made by men who have no adequate personal experience with this operation, and are usually advocates of some other operation that has never stood the double test of pregnancy.

Equally void of fact are the statements that the round ligaments are sometimes absent, and that they can frequently not be found, or only with great difficulty, and that they are too feeble to serve really. Confirming the declarations of most of those operators who have learned how to find the round ligaments, the writer can say that, after his initial pupilage upon the round ligaments of a dozen dead women, he has never failed to find both ligaments in each of at least 190 living subjects operated upon. These comprised in the first place over 75 simple Alexanders, and subsequently 114 cases of his own operation in which the bilateral celiotomy feature was added. But he has traced one ligament from within the pelvis outward in four cases, with most benign results to the patients. In women whose uteri are composed not merely of rudimentary cornua, the round ligaments *are always present, can always be found*, and can practically always be developed strong enough surgically by reinforcement with adherent peritoneum to permanently poise the uterus in anteversion as its state of stable equilibrium. But whether they will also serve in a new rôle—*i.e.*, for suspension of the uterus—remains to be proved.

In this capacity they are called to serve in the procedures devised by Carl Beck,¹⁰ New York; A. H. Ferguson¹¹ and D. T. Gilliam,¹² and partially so in the Kocher modification of the Alexander operation, in which the ligaments are sewed upon the aponeurosis in a direction toward the anterior superior iliac spines. This suspending rather than merely poising of the uterus by the round ligaments, together with the fact that most of their cases were operated for prolapse, the writer believes to be the reason why, in Krönig and Feuchtwanger's report, 3 recurrences of retroversion occurred out of 18 cases of simple Alexander operations, and also why they are the only ones who have met a recurrence of retroversion after subsequent labor, which they record to have been the case in two out of nine such cases examined. The writer has regarded prolapsus uteri of more than the first degree usually as a contraindication for this operation, because the marked elongation of the sacro-uterine ligaments which is present in those cases makes poising forward of the uterus by the round ligaments illusory, and converts any shortening of these ligaments into a suspension by them, for which they were certainly not intended. But when prolapsus uteri occurs in younger, fruitful women, which is much more frequently so in Europe than here, then the most auspicious treatment is by thorough vaginal plastics and a round-ligament suspension of the uterus; whereas for prolapse in probably unfruitful women it is much better to associate the vaginal operations with either a thorough vagino- or ventrofixation of the uterus.

The operation has practically no mortality. In 114 cases of the writer's inguinal celiotomy and over 75 previous cases of thorough Alexander operation—associated in a large majority of all the cases with from one to three plastics—the writer has had no death ascribable to the bilateral inguinal celiotomy as such; diabetes mellitus in one case was not discovered owing to a fatal interchange of samples of urine by a nurse, and the patient was subjected to a long ether narcosis and a series of operations, and died in forty-eight hours afterward. And six to seven other operators have performed a hundred or more consecutive Alexander operations with either no death, or approximately one per cent in cases where a long series of operations was performed.

Diagnosis.—This operation is pre-eminently a gynecological one, because it presupposes a gynecological diagnosis to have been made, not merely as to the topography of the parts, but also as to the presence or absence of septic accumulations—a

subject that is treated too laxly in general by some American operators. However, this is no impossibility nor a hardship, but merely a reasonable requirement, when, as here, much of the remote future welfare of the patient depends upon such a previous diagnosis. This degree of skill in bimanual palpation and *tactus eruditus* in operating without constant sight is only a normal requirement of any one who claims to be specially fitted for the surgical treatment of female pelvic disorders. The fact that we certainly cannot make even approximately correct diagnoses in some cases does not give us a license to operate in a larger number of cases, also without a diagnosis. As a rule, the patient is entitled to know beforehand both the degree of danger involved in the operation and also what health she will probably enjoy and what she will be capable of after any given operation, before she accepts it, and an approximately correct diagnosis only will enable the operator to discharge this first duty to his patient. However, there are cases of retroversion with adhesions and diseased adnexa in which tenderness at first is very great, so that septic accumulations cannot at once be ruled out nor recognized to be present. These the writer consigns to complete and constant recumbency for ten or fourteen days, with daily saline laxatives, suitable diet, two or three very large and very hot vaginal douches daily, and with thick hot fomentations that envelop the whole abdomen and sides, are renewed every twelve hours, and are carefully covered successively by oiled silk, common cotton, and a generous flannel bandage over all. With this treatment many ominous-appearing features will clear up. But if any tumefactions or indurations retain their former exquisite tenderness to touch, there is probably pus or its equivalent present, and the inguinal route or celiotomy of any kind without sight should not be chosen. *The scars* are usually a matter of indifference to the patient, because it is quite true what Burrage says, that because of their position in the fold of the groin they show much less after a year than any incision in the median line or on a convex portion of the abdomen. And when patients are given honestly to understand the life tenure of service afforded by this operation as compared with the uncertain and temporary service of all the equally harmless vaginal procedures, it is also true what H. Kreutzmann¹⁸ says, that only those who make merchandise of their bodies will object to these scars.

The following table (pages 622-627) states the most important features of each of the 22 cases operated upon by the

writer during the first eight months, chiefly, of the year 1899. The dates are given of the operation and of the last subsequent actual examination by himself or another physician in each case, together with the objective and subjective conditions. Three cases operated upon in Germany are not included. The shortest period between operation and last examination (not last report) is seven months and twelve days, and the longest one year, eight months, and one day—the average period of time being one year, two months, twenty-two days.

Of these 22 cases, 7 presented actual organic adhesions of the retroverted uterus itself, and in 7 cases the tube and ovary of one or both sides were liberated out of adhesions that were distinctly felt in every instance. In the remaining 8 cases the finger found no actual adhesions, although in some (about one-half) the difficulty in reducing the dislocation of the organs before operation made adhesions probable. These were probably what Sielske⁹ calls fixation by cohesion. In one case (14) both tubes were found closed and filled firmly with tubercular (cheesy) pus, and were carefully enucleated without rupturing and removed with the ovaries, and primary union of both wounds followed. Removal of the tube and ovary of one side and resection of the other ovary was done upon 8 cases (Nos. 2, 4, 10, 13, 19, 20, 21, and 22). Removal of one tube and ovary was made upon 2 cases (Nos. 11 and 12). Removal of one pregnant tube without its ovary was done in one case (No. 8), in which the tube and ovary of the other side had been removed eighteen months previously, when the round ligaments were also shortened by ventral celiotomy. But an intervening pregnancy and labor at term had wiped out every trace of that shortening and a marked retroversion had returned.

Resection of one ovary was made in 4 cases (Nos. 3, 5, 16, 18), and of both ovaries in 6 cases (Nos. 1, 6, 7, 9, 15, 17). Suspension of an ovary was done in 4 cases (Nos. 4, 6, 8, 19). Of collateral operations the following were performed: Curettement in every case, usually with cauterization and packing. Cystoscopic examination in 2 cases (Nos. 6 and 9), with cauterizing of portions of bladder mucous membrane in one of them. Simple trachelorrhaphy in 1 case (8). Schröder cervix operation in 3 cases (Nos. 5, 15, and 20). The writer's "intrapelvic, infravaginal perineorrhaphy without loss of tissue" (*Medicine*, July, 1897) in 8 cases (Nos. 2, 4, 5, 7, 8, 11, 13, 15), and hemorrhoids were burned off wherever present as a final act.

The present state of health of these 22 cases is as fol-

lows: Fifteen are well and discharging their duties regularly without any constant or regular ailment, aside from such things as an occasional headache or sideache, or slight pain with menstruation. Three (Nos. 3, 6, 15) are attending to their duties regularly, but have more severe or more frequent pain from their pelvic organs, No. 15 having an oöphoritis dextra, and a beginning retroversion as the first instance of returning displacement that the writer has experienced in over 100 of his cases that he has examined. Case 1 is a neurasthenic and rheumatic subject, in whom the neurasthenia was regarded as largely due to her pelvic condition by himself and two other physicians who preceded him; for she had a decidedly large and retroverted uterus, with large cystic ovaries that dragged low down and forbade a pessary. She was afflicted with subacute rheumatism for several months after leaving the hospital, and her dysmenorrhea and nervous condition have not improved in proportion with the position of her pelvic organs. She claims to be suffering as much as before operation. The remaining cases (14, 17, and 18) are well as far as their generative organs are concerned, but they are partially disabled respectively by tuberculosis of the urinary tract, endocarditis, and catarrh of naso-pharynx and bronchial tubes.

The operation, therefore, has corrected the position and condition of the generative organs in all except one case, and it has eliminated the symptoms from them in all but four cases, in whom they are less severe but not absent.

But the crowning superiority of round ligaments shortened via their natural channels over all competing operations is found not merely in their harmlessness, but in not permitting a return of the retroversion of the uterus after subsequent pregnancy and labor at term. In this, its continued serviceability, as a rule, beyond successive labors, it stands without a competitor, according to all positive evidence that has been or is likely to be adduced.

While a smaller number of abortions have occurred, mostly upon provocation, the writer now knows of 8 of his cases going to term normally and passing through a natural labor, with one exception of a breech presentation which required artificial delivery. Seven were examined by himself, and 1 by another physician, after the following periods after labor: (1) eighteen months, (2) fifteen months, (3) thirteen months, (4) twelve months, (5) eleven months, (6) ten months, (7) three months, and (8) two months. And in each case the uterus is

No. Age. Para (?).	Anatomical diagnosis at the time of operation.	Operations performed <i>in addition</i> to shortening and anchoring the round liga- ments. Date.	Nature of the convalescence from opera- tion.
1. 30 years. Nullipara.	Metritis. Marked retrover- sion, movable. Very large multicystic and descended ovaries. Pessary not borne. Neurasthenia.	Curettement and packing of uterus. Resection of both ovaries. Exsection of large follicle and corpus luteum cysts. January 2, 1899.	Afebrile. Per- fect primary union.
2. 31 years. IIIpara + abortion.	Metritis. Retroversion, ex- treme, movable. Painful cirrhotic left ovary. Right ovary with follicle cysts and adherent, not so painful. Lacerated perineum.	Curettement and packing of uterus. Removal of left tube and cirrhotic ovary. Resection of right ovary. Posterior kolpoperineorrhaphy January 9, 1899.	Afebrile. Com- fortable. Complete pri- mary union.
3. 21 years. Nullipara.	Endometritis. Marked retro- version, movable. Adherent cystic right ovary. Left ova- ry removed elsewhere two years previously by ventral celiotomy.	Curettement and packing of uterus. Right ovary liber- ated and resected. January 9, 1899.	Complete pri- mary union.
4. 31 years. Multipara + abortion.	Metritis. Severely adherent retroversion. Cystic and cirrhotic ovaries; left one adherent. Complete laceration of perineum and sphinc- ter ani. Anemic.	Curettement. Left ovary and tube liberated and removed. Right ovary resected and suspended. Perineoprocto- rhaply. January 10, 1899.	Complete pri- mary union of all except last one or two stitches in sphincter ani.
5. 37 years. Ipara.	Chronic metritis. Pathologic cervix. Mobile retroversion of uterus, but descended ad- herent adnexa. Lacerated perineum.	Curettement. Schröder cer- vix operation. Liberation of both tubes and ovaries. Resection of left ovary. January 30, 1899. Also "in- trapelvic infravaginal peri- neorrhaphy without loss of tissue."	Afebrile course and complete primary union.
6. 21 years. Nullipara.	Congenital marked retro- flexion, movable. Descend- ed cystic ovaries. Endome- tritis. Hemorrhagic cysti- tis.	Cystoscopic examination of bladder and 5 per cent so- lution of arg. nitrate ap- plied. Curettement. Resec- tion of both ovaries and suspension of left. February 11, 1899.	Nearly afebrile course and complete pri- mary union.
7. 24 years. Ipara.	Hemorrhagic endometritis. Extreme retroversion of uterus, movable, with cys- tic ovaries, left one much descended. Lacerated peri- neum. Anemic. Severe dys- pepsia.	Curettement and packing of uterus. Resection of both ovaries. Intrapelvic infra- vaginal perineorrhaphy. February 20, 1899.	Primary union of inguinal wounds, but suppuration in infrava- ginal wound, and tempera- ture for ten days.
8. 30 years. Multipara.	Retroversion, adherent. La- cerated cervix. Endome- tritis. Right tubal swelling. Lacerated perineum (round ligaments had been short- ened and left ovary and tube removed a year previously by ventral celiotomy. A baby came and spoiled it all.)	Curettement. Trachelorrhaphy. Removal of right (only remaining) tube with a small, unruptured tubal pregnancy. Suspension of right ovary. Intrapelvic infravaginal perineorrhaphy. March 13, 1899.	Perfect prima- ry union in all wounds. Afe- brile course.
9. 24 years. Nullipara.	Congenital marked retro- flexion, movable. Large, de- scended, globular ovaries. Severe vesical tenesmus without other evidences of cystitis.	Inspection of bladder nega- tive. Curettement. Resec- tion of both ovaries. March 16, 1899.	Afebrile. En- tire primary union. No more vesical tenesmus at leaving hospi- tal.

Date of last examination, and position and condition of the pelvic organs.	Unmarried or pregnancy.	Concomitant causes of impaired general health, and occasional treatment since operation.	Authentic recent reports of subjective condition in general.
July 17, 1899. Uterus markedly anteverted, but tender to bimanual touch. Ovaries hardly accessible. Left one tender and cause of side-ache at times.	Unmarried.	Had acute and subacute rheumatism for two to three months after leaving hospital. Declined to take medicine properly. Is partly given to "faith cure." Neurasthenic insomnia and dysmenorrhea continue. July 17, 1899.	August 15, 1900. Is about in the house and takes walks. Is well nourished, but is afflicted with insomnia, nervousness, and dysmenorrhea.
September 10, 1900. Uterus somewhat large, but in good anteversion. No tenderness of uterus or adnexa. Slight laceration of perineum.	Child 2 months old. Ten pounds at birth.	Four previous labors lasted twenty-four to thirty-six hours. Is surprised at this birth taking only two hours and without assistance.	September 10, 1900. Patient doing light housework and nursing child. Is somewhat weak, she says, but feels well.
August 22, 1900. Uterus in normal position and mobility: catarrhal. Eroded os. Va initis. Right ovary little descended and tender. Small, painful cystic body in left broad ligament. Admits coitus.	Unmarried.	Tender stumps and cystic swelling in left broad ligament. Onanism.	August 22, 1900. Complaints of frequent pains in both sides and back. Dysmenorrhea. Is nervous, but well nourished.
August 20, 1900. Uterus anteverted, movable. To bimanual palpation little soft and enlarged. Not much tenderness after recent abortion. Right ovary normal. Full use of sphincter ani.	Recent abortion of three months after a fall.	Former anemia from excessive menstrual losses now partly renewed by hemorrhage in abortion.	August 20, 1900. Some weakness, otherwise the patient feels well. Has no pains or real discomforts.
August 14, 1900. Uterus in typical anteversion. Ovaries in ideal lateral locations. All organs freely movable and entirely void of tenderness.	.....	Anemia. Tonics. Soon resumed her housework.	August 14, 1900. Pelvic and general health quite perfect. Former intense and constant backache entirely gone. Dyspepsia also.
August 15, 1899. Some vesical irritability. No corpuscular elements in the urine. Uterus and ovaries in normal position and condition.	Unmarried.	Had irrigations of bladder every second day in hospital and one to two times a week out of it for about two months. Menses at same time scanty, but painless.	August 19, 1900. Is generally well, aside from some irritability of the bladder and a "weakness" and diffuse pelvic pain before menstruation. Intends to be married soon.
August 11, 1900. Ideal position of all pelvic organs, with normal condition. No tenderness anywhere nor pain at any time.	.....	Anemic. Tonics and intrauterine applications of tincture of iodine with syringe applicator in office.	August 11, 1900. Boasts of her good health, feeling, and strength. No leucorrhea. Menses normal.
September 6, 1900. Position and condition of uterus and remaining ovary normal.	.....	Two intrauterine tincture of iodine applications with syringe applicator and temperature douches to reduce subinvolution during first month out of hospital.	September 6, 1900. Very good general and pelvic health. Working hard every day.
August 22, 1900. Position and condition of uterus and ovaries normal. No excessive anteversion. No tenderness anywhere.	Unmarried.	Two recurrences of "irritable bladder" subsided upon two to three séances of gentle application of extrauterine vagino-abdominal faradic current, but during March, 1900, was sick and treated for what was claimed to be cystitis.	August 22, 1900. Has some vesical irritability only before menstruation, which is normal. No leucorrhea. General health very fair.

No. Age. Para (?).	Anatomical diagnosis at the time of operation.	Operations performed <i>in addition</i> to shortening and anchoring the round liga- ments. Date.	Nature of the convalescence from opera- tion.
10. 30 years. Nullipara + three abor- tions.	Metritis. Retroversion of uterus, movable. Adherent right tube and ovary con- glomerate. Globular left ovary.	Curettement and packing of uterus. Removal of right degenerated ovary and closed tube. Resection of left ovary. April 13, 1899.	Superficial sup- puration of both wounds, and some tem- perature.
11. 32 years. Multipara.	Chronic metritis. Retrover- sion of uterus, adherent. Ad- herent right tube and ovary. Lacerated perineum. Hys- tero-epileptic attacks.	Curettement and packing of uterus. Removal of right tube and ovary. Intrapel- vic infravaginal perineor- rhaphy. May 11, 1899.	Afebrile, and complete pri- mary union.
12. 33 years. Nullipara.	Marked retroflexion of mov- able uterus. Endometritis, hemorrhagic. Descended, adherent, cystic right ovary preventing use of pessary.	Curettement and packing of uterus. Removal of right tube and ovary. May 15, 1899.	Primary union and no tem- perature.
13. 24 years. Ipara.	Adherent, retroverted, and subinvolved uterus in sub- acute metritis. Subacute pelvic peritonitis (puerpe- ral) and adherent left tubo- ovarian conglomerate. Tem- perature 101° in the evening.	Curettement. Removal of left tube and ovary (septic?). Resection of right ovary. Intrapelvic infravaginal pe- rineorrhaphy. May 1, 1899. Some hemorrhage from a wounded vein on left side.	During second week tempe- rature 103° in the evening from late and deep-seated suppuration. Subsided af- ter opening of wound.
14. 20 years. Nullipara.	Retroversion, slightly mov- able. Adherent, firm tubo- ovarian swellings on both sides without exquisite ten- derness. Cystitis.	Curettement. Removal of tu- bercular, closed tubal ab- scesses with thick walls and thickened, cheesy pus, by enucleation without rup- ture. One size of thumb and the other of an index finger. May 22, 1899.	Afebrile course. Pri- mary union, but a very ob- stinate cysti- tis.
15. 25 years. Ipara.	Retroversion. Adherent cys- tic ovaries. Pathologic la- ceration of cervix, Lacerat- ed perineum.	Curettement Schröder cer- vix operation. Resection of both ovaries. Intrapelvic infravaginal perineorrhaphy. May 22, 1899.	Afebrile course. Per- fect primary union.
16. 29 years. Nullipara.	Mobile retroversion of an im- perfectly developed uterus, with stenosis of cervical canal. Descended cystic left ovary.	Wide dilatation of cervical canal. Curettement and solid jacking. Resection of right ovary. May 29, 1899.	Afebrile. Com- plete primary union. Little bronchitis.
17. 20 years. Nullipara.	Congenital retroversion, mov- able. Cystic descended ova- ries. Extreme dyspepsia and backache.	Curettement of cervical canal only. Plastic on introitus vaginae. Resection of both ovaries. June 22, 1899.	Perfect prima- ry union.
18. 31 years. Multipara + abortion.	Endometritis. Retroversion of uterus, moderately movable, but appendages of both sides very adherent. Left ovary cystic. Constant pelvic pains. Backache and severe dysmenorrhea.	Curettement and packing of uterus. Resection of left ovary and liberation of right tube and ovary. June 26, 1899.	Late suppura- tion of wound of one side.

Date of last examination, and position and condition of the pelvic organs.	Unmarried or pregnancy.	Concomitant causes of impaired general health, and occasional treatment since operation.	Authentic recent reports of subjective condition in general.
August 14, 1900. Position and condition of uterus very good. Left remaining ovary negative.	.....	.....	August 14, 1900. Menstruation normal. No leucorrhea. General health excellent but the much-desired pregnancy has not yet come.
August 18, 1900. Married three months ago. An abortion six weeks ago. Uterus now a trifle large and tender, but in perfect anteversion. Left ovary tender to touch and coitus	Abortion at six weeks.	Had no more epileptiform attacks since operation, but took ferri sulphas, asafetida, and amm-nii valerianas couple of months, and general nervousness improved.	August 18, 1900. Is in good general health, although nervous. Has gained much in weight and strength.
September 6, 1900. Uterus well anteverted and void of tenderness. Left (only) ovary somewhat globular and a little tender.	Unmarried.	.....	September 6, 1900. General health good. Menstruation normal. Occasional pain in left side. Is a busy physician.
August 28, 1900. Position and condition of uterus and right ovary normal. No tenderness anywhere. Slight leucorrhea.	.....	In feeble general health from living in very poor surroundings, nursing a child, and being afflicted for several months with pulmonary tuberculosis (probable).	
August 20, 1900. Uterus small, anteverted, void of tenderness and discharge, but bladder tender on bimanual palpation and left kidney very tender. Urine now clear.	Unmarried.	Patient is clearly a tubercular subject and in feeble condition from the persistent urinary affection and from repeated suppurating lymph glands on the neck.	
September 6, 1900. Short, stubby, hard uterus in moderate retroversion and tender. Right ovary adherent, swollen, and tender.	.....	Patient says that, aside from minor occasional pains, her health was fair until three months ago. Since then has dysmenorrhea and pain in right side and back much of the time.	
September 13, 1900. Position and condition of organs ideal. No tenderness; no leucorrhea.	.....	.....	September 13, 1900. Pelvic functions wholly normal. Is robust and enjoys perfect general health aside from an occasional headache.
September 12, 1900. Position and condition of pelvic organs normal.	Unmarried.	Menstruation excessive two months after operation. Two intrauterine tincture of iodine applications with syringe applicator. During last three months afflicted with subacute endocarditis.	September 8, 1900. Is quite robust. No dyspepsia since operation. Menses normal. No leucorrhea. Some backache before menses. Valvular heart lesion nearly gone.
March 2, 1900. Position of uterus and ovaries very good. Condition likewise, aside from tenderness of right ovary, chiefly at menstrual times.	Is reported to be pregnant two to three months.	September 1, 1900. Patient has been roving from one doctor to another and to some quacks for treatment, chiefly for pain in the chest and a throat affection.	Does her house-work, but complains of throat and chest symptoms. Thinks she has consumption. Is hysterical. Has some pelvic pains and is probably pregnant two to three months.

No. Age. Para (?)	Anatomical diagnosis at the time of operation.	Operations performed <i>in addition</i> to shortening and anchoring the round ligaments. Date.	Nature of the convalescence from operation.
19. 25 years. Nullipara.	Endometritis. Retroflexion, adherent. Descended ovaries; left one large, globular. Severe dysmenorrhea, and backache constant.	Curettement. Removal of left tube and ovary. Resection of right ovary and suspension of same. July 15, 1899.	Late suppuration of one side.
20. 30 years. Multipara.	Metritis. Pathologic laceration of cervix. Retroversion, with marked adhesions of uterus and adnexa.	Curettement. Schröder cervix operation. Removal of left tube and ovary. Resection of right ovary. November 23, 1899.	Afebrile. Complete primary union.
21. 20 years. Nullipara.	Marked retroversioflexion, congenital and movable. Large cystic, descended right ovary, but disabling pain from left cirrhotic ovary.	Curettement. Removal of left cirrhotic ovary. Resection of ovary, cystic, size of hen's egg. December 12, 1899.	Perfect primary union.
22. 21 years. Nullipara.	Endometritis. Retroversion extreme and movable. Large globular ovaries. Extreme vaginismus, dysmenorrhea, and dyspareunia. Scanty urine.	Vulvar stretching and plastic operation. Curettement. Removal of left ovary and tube. Resection of right ovary. December 30, 1899.	Uremic manifestations. Late suppuration of one side, and temperature 103° for about ten days.

sufficiently anteverted to invite the play of intra-abdominal pressure upon it in the normal direction. The pronounced character of the anteversion in these cases bears testimony in favor of the observations and the theory of Rühl⁶ and J. Schultz, that the supervention of pregnancy after this operation causes the round ligaments to grow stronger in the same manner as muscle is strengthened by exercise—*Arbeitshypertrophie*—in addition to the natural evolution of the ligaments in pregnancy, along with the uterus as a part of it. Furthermore, Edebohls and J. Schultz each record 7 cases, Rumpf¹¹ and Stocker⁷ 8 cases—all examined after one, and several after two labors, without a return of retroversion in a single case. Burrage⁸ observed in all 12 cases of pregnancy and labor after the Alexander operation. In 2 cases the operation had been a failure primarily, and 1 had to endure a manual separating of the placenta and a long and severe septic puerperium. In these 3 cases, for these very sufficient reasons, displacement of the uterus had recurred, but in the 9 others that could be fairly counted the uterus continued in mobile anteversion. Thus we have a collection of 50 cases of this kind by six different operators, without any recurrence of displacement in a single

Date of last examination, and position and condition of the pelvic organs.	Unmarried or pregnancy.	Concomitant causes of impaired general health, and occasional treatment since operation.	Authentic recent reports of subjective condition in general.
August 24, 1900. Position and condition of uterus and remaining ovary good, aside from some tenderness of ovary. No leucorrhea. Some renal insufficiency.	.....	Patient has had marked and constant backache for several months, found to be in muscles of back. Relieved by salicylic, soda, potassium iodide and "thialion," and several applications of galvanism to right ovary.	
August 2, 1900. Position and condition of uterus and right ovary very good, but tenderness of stump on left side, and backache.	.....	Pain on left side and backache relieved by vaginal abdominal galvanic current applied fifteen minutes seven to eight times and internally "thialion."	August 2, 1900. Is quite robust, having gained in weight. Does her housework, but has some pain with menstruation and occasionally on left side of pelvis.
August 13, 1900. Uterus in ideal position and condition. Right (only) ovary not easily reached. No tenderness and no leucorrhea.	Unmarried.	.....	August 13, 1900. Patient glories in perfect health and is very thankful. Has gained much in weight. Works hard. Has no discomfort anywhere or at any time. Menses regular and normal.
August 11, 1900. Examination just after menstruation. Uterus in normal anteversion. Little tenderness of uterus and ovary.	.....	.....	August 11, 1900. Does her housework. Little pain with menses only. Vaginismus and dyspareunia nearly gone. Some little recurrences of cystitis.

instance. In addition to that come 9 cases by Krönig and Feuchtwanger (Zweifel's clinic), with 2 recurrences of displacement, which are accounted for, in the writer's opinion, by the fact that the ligaments in their cases were used more as suspensories after the Kocher method of the Alexander operation, particularly as one of the failure cases had a prolapse in the beginning. But with a liberal construction and without an exhaustive search, and with the naturally inferior results of their several apprenticeships all included, the advocates of inguinal shortening of round ligaments have 59 cases, all but 2 of which have passed the double test of pregnancy successfully, while the much greater number of advocates of other supposedly competitive procedures have not brought forth a single case officially out of their manifold greater number of cases that has passed the same test successfully and could be placed in a column to offset any one of the 57 in the Alexander column. Aside from Burrage, every one of these operators, as far as the writer has been able to ascertain, has applied only the single test of pregnancy to his cases, in noticing merely that his operation did not embarrass gestation or complicate labor in his patients. But what becomes the status of

the pelvic organs of their patients, as a rule, after labor, none of these gentlemen has either cared or dared to reveal. As long as the progenitors and defenders of ventrosuspension by all the various "artificial ligaments," so-called, and of abdominal and vaginal shortening of the round ligaments, of vaginofixation of these ligaments, and of the more innocent degrees of vaginofixation of the uterus, do not apply what the writer has named the double test of pregnancy as the normal standard to their cases subsequently, by reviewing all of them systematically after an intervening labor, and do not find that the majority of such cases retain an anteverted uterus—so long we cannot accord to these, their favored operations, the dignity and value of curative procedures, but must view them merely as more or less unnatural and temporary or auxiliary relief measures, to be very sparingly applied to fruitful females; because the various substitutes for ligaments that are devised cannot conform to the fundamental requirement to undergo an actual *evolution* and also *involution* with the uterus during gestation and after labor, but they merely stretch and afterward remain long and incapable of good, but not of doing harm. And the various methods of shortening the round ligaments by doubling them up or stitching loops into them are dependent upon the uncertain tenure of stitches and adhesions. They are frequently followed by a relapse of retroversion before pregnancy supervenes, and when this does follow and go to term it effectually eliminates all such loops from the round ligaments, as the writer has repeatedly seen, and leaves the ligaments as long as ever.

519 CLEVELAND AVENUE.

REFERENCES.

1. KRÖNIG AND FEUCHTWANGER: Monatsch. f. Geb. ü. Gyn., Bd. xl., H. 4.
2. J. SCHULTZ: Beiträge z. klin. Chir., Bd. xxiii., Hft. 3.
3. RUMPF: Archiv f. Gyn., Bd. lvii., Hft. 2, S. 446.
4. EDEBOHLS: Amer. Gyn. and Obstet. Jour., Dec., 1896, p. 671.
5. KOCHER: Chirurg. Operationslehre, 2 Aufl., 1894.
6. RÜHL: Samml. klin. Vorträge, 185 u. 186, 1897.
7. STOCKER: Centralbl. f. Gyn., 1896, No. 21, S. 550.
8. BURRAGE: Med. News, 1898, vol. lxxiii., p. 453.
9. SIELSKIE: Centralbl. f. Gyn., 1898, No. 3, S. 892.
10. BECK, C.: Centralbl. f. Chirurg., 1897, No. 33.
11. FERGUSON, A. H.: Jour. Amer. Med. Assoc., Nov. 18, 1899.
12. GILLIAM, D. T.: AMER. JOUR. OBSTET., March, 1900.
13. KREUTZMANN, H.: Monatschrift f. Geb. u. Gyn., Bd. iii.-iv., p. 319.

POSTRECTAL OR PRESACRAL GROWTHS.¹

BY

JAMES F. W. ROSS, M.D.,

Toronto, Can.

My experience with postrectal tumors (excepting the osteomata) is limited to four cases. They may be given shortly as follows:

CASE I.—Mrs. F., 35. Referred to me by Dr. Poole, of Lindsay, on February 22, 1894. Family history: Father and mother living. Grandmother died of cancer. No other history of growths in the family. No tubercular history. Patient had two children, last one 5 years old. Has always had good health. Had some attack of indefinite inflammation in the abdomen as a child. At present suffering from varicose veins in the right leg. Loses blood from hemorrhoids. Suffered from puerperal mania, but made a complete recovery. Menstruation regular; leucorrhea present. Suffers from bearing-down pains at the front of the abdomen and in the sacral region. She is not enlarged over the abdomen and has noticed no lump. Two years ago blood came from the rectum in considerable quantity, so that it “splashed” over everything. The patient thought the blood came from “piles.” The pain in the back is of a beating character. It is worse at night.

On examination I found the uterus in front and toward the right side. A mass was to be felt behind the uterus that at first appeared to be in the recto-vaginal septum, but on passing the finger into the rectum this mass was determined to be behind the bowel. No fluctuation could be made out. Tumor felt solid, but not hard.

Owing to the fact that the patient's grandmother died of malignant growth and that the patient's color had changed during the last six months, I came to the conclusion that the tumor was in all probability a malignant growth growing behind the rectum. To determine the exact nature of the tumor, however, I advised exploratory operation and perhaps a puncture of the tumor itself through the rectum or perineum.

¹ Read before the American Association of Obstetricians and Gynecologists, at Louisville, September 18-20, 1900.

April 18, 1894, abdomen was opened in the median line and uterus found to be in front of the tumor. Both ovaries and tubes were healthy. There were some few adhesions to the abdominal wall in front. A large mass was found behind the rectum in front of the sacrum. No definite fluctuation could be felt, but tumor seemed to be of brain-like consistence. Vessels over its surface were very much enlarged, and it was considered inadvisable to attempt its removal. The patient recovered from the operation.

At a subsequent period in the history of the case the relatives became uneasy. A consultation was called and puncture through the rectum advised. I had already carried out puncture by means of the hypodermatic needle and extracted nothing but blood, and satisfied myself that the growth was sarcomatous. However, puncture was carried out by means of a trocar and canula, contrary to my advice, and I was afraid the patient would bleed to death. I have never seen blood pour from a tumor with such rapidity as it did in this instance. It was found necessary to pack the rectum to control the hemorrhage by pressure. The patient recovered and went home. I heard from her and saw her from time to time.

The constipation became more marked, neuralgic or pressure pains became more severe, and it was found necessary at last to draw the urine by catheter. Bladder was drawn up about seven or eight inches. There was no swelling of the limbs. Patient became emaciated and very sallow; was confined to bed for about three or four months before death ended her sufferings. She died in November, 1896, about two and a half years after the exploratory operation was performed.

CASE II.—Mrs. P., æt. 28, entered the General Hospital December, 1898; had been married ten years.

On vaginal examination I found a swelling to the left of the uterus. It was indefinite. Examination through the rectum then showed the tumor to be behind and to the left of the rectum. Fluctuation could be noticed. Tumor did not come down far into the pelvis. It was small in size. Advised exploratory operation, and on the 3d of December, 1898, opened the abdomen in the median line and found ovaries and tubes normal, uterus normal, and the growth rising behind the rectum and the peritoneum to the left of the rectum. Decided that it would be wiser to tap the growth from below at some future time. From the fluctuation it appeared that the contents were thick and that the tumor might perhaps be a dermoid.

The patient has been seen since. Tumor has not increased

in size, and, with the exception of a few neuralgic pains, she suffers but little inconvenience from her condition.

CASE III.—Mrs. B., æt. 32, mother of three children, last of which is 2 years old. Never had any miscarriages. Nothing in the family history to assist in making a diagnosis. Menstruation regular. She suffers no particular pain, but feels ill. Appetite poor. Never been well since the last child was born. Complains that the “womb” comes down very much. There is a buzzing noise in the head and her hearing is at times defective. Feet swell. An examination of the urine determined the presence of chronic nephritis. Suffers from pain in the back, running down the sciatic nerve on the left side.

On examination a tumor was found behind the peritoneum to the left of the rectum, behind the meso-rectum. No fluctuation could be made out in the mass. Advised exploration of the growth, and on the 8th of December, 1899, opened the abdomen in the median line. Found tumor behind the rectum. I decided that, owing to the patient's condition, it was inadvisable to attempt to remove it, and closed the abdomen. The tumor was about the size of an orange. It felt irregular in places, but generally smooth and rounded.

On examination by the rectum, with the fingers of the other hand in the abdominal cavity, the tumor was found to be either in the rectal wall or behind it. Ovaries, tubes, and uterus were found to be in a normal condition. The patient recovered from the operation.

She is still under my care. The tumor has not increased in size. The pressure symptoms are not urgent, but the general condition is not good owing to the uremic symptoms produced by the chronic nephritis. The tumor behind the rectum is of secondary importance under the circumstances. I feel satisfied that it is not a malignant mass, but that it is very probably a dermoid of slow growth that may have been there for a considerable time, but was not noticed until a thorough examination was instituted.

CASE IV.—Mrs. I., referred to me by Dr. Stevenson, of Trenton, on August 16, 1900. A woman 30 years of age; has had one child and two miscarriages, the last one three years ago. Menstruation rather frequent, discharge small in quantity. At her confinement there was considerable difficulty and the doctor then noticed a tumor. She was delivered with instruments.

For three years she has known that she had a tumor and has been gradually getting stouter over the abdomen. Been troubled very much with constipation. There has also been dysuria.

On examination I found a mass readily rolling about the abdomen and seated on the front of what appeared to be a fluctuating tumor. On vaginal examination a fluctuating mass was found bulging down into the vagina, and on rectal examination this mass was found to be behind the rectum, bulging into the perineum. Distinct fluctuation could be made out from above downward and also laterally. The uterus was found with considerable difficulty, owing to the fact that it was difficult to reach the cervix. The mass before mentioned as moving so readily in front of the tumor proved to be the uterus itself.

On the 17th of August, 1900, I opened the abdomen in the median line. The uterus was found on the top of the tumor, and when the incision, that was made well up toward the umbilicus, was completed, one ovary bulged out through the opening. The uterus and both ovaries could be readily lifted out of the abdomen, so that the broad ligaments could be seen in their entirety. I drew these out, so as to demonstrate to those present the laxity of the tissues about the uterus and ovaries. The bladder was drawn high up and would have been incised had not the incision been made well up toward the umbilicus in order to avoid this organ. Decided it was inadvisable to attempt to remove the tumor from the front and that it should be emptied from below. Abdominal cavity was closed and an incision was then made behind the rectum, extending back to the coccyx. The tumor was readily reached and grumous material exuded at the first puncture. This had the appearance of the sebaceous material found in dermoid tumors. There was no hair present. The cavity from which this exuded was evidently small, and a second puncture was required, through which nothing but clear watery fluid poured as the tumor collapsed. The finger was passed up and the tumor was found to be intimately connected with the sacrum. I felt satisfied that it would be impossible to remove it. The prominences of the sacral bones could be felt, with nothing but a very thin covering, about the thickness of the peritoneum, over them. The wall of the tumor was stitched to the skin, and the tumor cavity packed with iodoform gauze to produce irritation for the purpose of effecting the closure of the tumor

at a later period. The gauze was removed and the tumor sac washed out daily. The abdominal wound healed by first intention. The tumor contents remained as they were in the second cyst cavity at first, namely, clear and watery.

The patient appeared to be making a good recovery until two weeks after the operation, when she began to complain of pain in the limbs and dysuria. These pains subsided, the temperature became elevated, tongue looked brown, and the face assumed the appearance of that of a person suffering from enteric fever. Delirium came on at night. In deference to the patient's wishes she was removed to her home, and Dr. Stevenson is now in attendance. He looks upon the case as one of enteric fever, according to his last letter. There is no pus to be found anywhere and no evidence of septic infection from the tumor. At first I took it for granted that the infection arose from the tumor contents, but after washing out the sac I was forced to change my opinion. I will be able to report the subsequent progress of the case for publication in the Transactions.

It is but a few years since the peritoneum was thought of as a structure of no particular importance to the surgeon, and but half a century has passed since a study of peritonitis was begun. At the present time our knowledge of diseases and growths that invade the interior of the peritoneal cavity is great, and we are able to deal with these conditions in a manner that would appear but little short of marvellous to our ancestors. Now that the diseases and growths affecting the interior of the peritoneal cavity are so well known, it is wise that we should turn our attention to the tissues outside of the peritoneum, or the subperitoneal tissues.

The subperitoneal or preperitoneal tissue is derived from mesoblastic elements lying in front of the spine, and it encircles the great vessels and spreads around the trunk wall, following the vessels to their ultimate destinations in the viscera and to the limbs and other parts of the body. The tissues contain fat in places, and here and there a few bands of unstripped muscular fibre can be found. The tissue is elastic and areolar, containing lymphatics and lymph spaces.

In the omentum and in the mesentery we sometimes find fat deposited in considerable quantities, and this may also occur in other situations in this subperitoneal tissue. It seems particularly liable to occur in the neighborhood of either one or the other kidney. These growths sometimes attain a large

size, weighing from forty to sixty pounds. We have nothing to do in this paper with these growths, but it is well to mention their occurrence when discussing the question of postrectal tumors. These enlargements appear to be more frequent in the female than in the male. They give rise to but few symptoms. The patients apparently "just grow stouter" in the abdomen and become emaciated. They eat and feel well until dyspnea comes on as a consequence of the increase in size. Puncture elicits no fluid, and suppuration may occur at any time and produce fever. There is usually anasarca, beginning at first on the one side, and then affecting both limbs. Such enlargements are closely allied to malignant growths, and many of them contain myxomatous or sarcomatous elements.

Their treatment has consisted, in some cases, of removal. According to Adami's statistics, only 12 cases were successfully removed out of 26 operations. The dangers incident upon such an operation are disturbance of the mesenteric vessels, interference with the blood supply to the intestine, and consequent gangrene. Resection of the intestine has been performed as a consequence of injury to the mesenteric vessels during the removal of such growths, and resections of from a few inches to four feet of intestine have been performed.

In the pelvis fetal relics are to be found in the broad ligaments as the tubules of Kobelt, representing the Wolffian bodies; along the vagina as the duct of Gärtner, representing the Wolffian duct; and over the coccyx as the coccygeal body, representing the postanal gut.

The tissues about the two orifices that are analogous, namely, the mouth and the anus, are really invaginations of the epiblast used in the formation of the stomodeum and proctodeum. It is easy to understand what the postanal gut is if we remember that the proctodeum invaginates to form part of the cloacae and meets the intestine in front of the opening of the neurenteric canal. There must, therefore, be a portion of the intestine left behind the anus. This gradually disappears and leaves the coccygeal body at the tip of the coccyx.

Any one who has had experience with branchial cysts and with vaginal cysts must have been struck with certain characters that are similar to both of them. They are sometimes filled with clear fluid, sometimes filled with mucoid material, and sometimes filled with what would appear to be blood that has been retained within a sac wall. Vaginal cysts are, at any

rate, of fetal origin, whether they arise from the ducts of Gärtner or not. Vaginal cysts are, of course, postperitoneal tumors, but are not postrectal tumors, so that we will give them no further consideration here. It is my intention to deal only with the neoplasms, and not to take up a consideration of inflammatory conditions of the subperitoneal tissues. They are well understood and readily diagnosed.

Knowing that embryonic elements lie behind the rectum, and understanding the development of the tissues in this neighborhood, we are able to explain the occurrence of many postrectal or presacral growths. Postrectal tumors are innocent or malignant. The innocent tumors are lipomata, fibromata, myomata, cystomata, enchondromata, osteomata, and dermoid tumors. The malignant tumors are sarcomata or carcinomata.

Innocent Tumors.—These tumors do not differ from tumors of a similar nature occurring in other parts of the body.

Enchondromata and osteomata, owing to their fixation, should be made out without much difficulty. I have met with such enlargements, and they have usually been found, during delivery, obstructing labor. They are firmly fixed and cannot be moved.

The lipomatous tumors are difficult to diagnose. They must occur with great rarity, owing to the fact that the most usual form of fatty tumor arising from subperitoneal tissue, namely, that found growing from the perirenal fat, is itself extremely rare. Presacral lipomata need, therefore, be merely mentioned.

Fibromata and myomata are of particular interest because they simulate malignant growths. An edematous change may take place in either of them. Placed as they are, they are liable to produce death by pressure effects if not removed, and if removed successfully will not recur.

Cystomata fluctuate and frequently grow to considerable size within a short period of time, and as a consequence they are easily diagnosed. It is, however, difficult to distinguish between simple cystomata and dermoid cystomata. The contents of the tumor will settle the diagnosis.

Dermoid tumors are not uncommonly found in this region. They occur as frequently in men as in women. Occasionally they bulge freely into the rectum, and long locks of hair will be found protruding through the anus.

The ordinary cysts found are evidently retention cysts produced by a collection of fluid in a connective-tissue space. A

cystoma, however, is a true tumor in which both walls and contents are new products.

It is well to remember that all retention cysts are very liable to become infected. Any of these innocent tumors may become malignant. The lipomata, fibromata, and myomata may soften, may become indurated, may become calcified, or they may suppurate. The myomatous tumors may soften as a consequence of edema, fatty degeneration, or myxomatous change. Fatty degeneration of a myomatous tumor is a rare occurrence. When myxomatous change takes place the tumors become practically fibrocystic. If calcification occurs the diagnosis will be rendered much more difficult.

Malignant Growths.—The form of malignant growth most frequently met with is sarcoma. Sarcoma occurs about the middle period of life. Carcinoma must arise from epithelial elements, and is likely to occur as a secondary deposit in the lymphatic glands as a consequence of the presence of carcinoma elsewhere.

I have seen scirrhus extend behind the rectum. The remains of an old postrectal abscess might be taken for commencing scirrhus growth. I have never met with a primary postrectal carcinoma.

The sarcomata are generally definite, rounded tumors of a brain-like consistence and of slow growth. In the one case occurring in my practice the growth had advanced to considerable dimensions before it was recognized, and the patient lived for about two years and a half after that time.

Etiology.—The cause of the tumors of fetal origin is known. The cause of the other tumors is not known.

Symptoms.—The symptoms produced by these tumors will depend upon the size and the nature of the tumor. Enchondromatous and osteomatous growths give rise to no symptoms that point to their presence. They are most frequently discovered for the first time when an examination is instituted for some other trouble.

The other tumors, of both malignant and innocent type, produce constipation. Hemorrhoids may be present, and bleeding from hemorrhoids may draw the patient's attention to the fact that there is something wrong. There is a sense of weight in the pelvis, and eventually pressure pains come on and extend down the sciatic nerve on either one or both sides. Later there is a temporary, evanescent, and sudden loss of power of the limbs. The patient may fall down as a consequence of

this and be unable to walk for a short time. She is unable to void urine, and it becomes necessary to remove this by means of a catheter. If the tumor extends high enough up to produce abdominal swelling, this swelling will be noticed. It may be irregular in shape. In the large majority of cases, however, no abdominal swelling will be noticed until after the tumor has been discovered. The patient's attention is usually drawn to her condition by the presence of pain in the pelvis.

It has been stated that there is enlargement of the superficial veins of the abdomen, but this enlargement must only occur after the tumor has attained very considerable dimensions. Cystitis may occur as a consequence of pressure on the bladder. Edema of the extremities may come on. The edema may occur first in the one limb, and, as the growth advances, may occur in the other. Cachexia will be met with in the cases of malignant growth, and will be absent in cases in which the tumors are not malignant.

Diagnosis.—The tumor can readily be made out to be behind the rectum. If definite fluctuation occurs it must be a simple cyst or a dermoid cyst. If semi-solid and giving a sense of fluctuation, it may be a dermoid. If no true fluctuation is found, and the tumor is very soft and irregular and uneven, we may suspect a lipoma. If of brain like consistence and without true fluctuation, the tumor may be a sarcoma, or a myoma or fibroma that has undergone edematous change. If hard and rounded and smooth, it may be myoma or fibroma that has not undergone edematous change. When filled with fluid these postrectal tumors feel very tense. The enchondromata and osteomata will be found fixed to the sacrum and will be rounded and flattened or spike-like.

The intrapelvic organs will be displaced according to the size of the tumor. If large, the uterus will be carried away up in front, so that it can be felt moving under the abdominal wall like a pedunculated nodule of a fibroid tumor. The bladder will be much elevated, and may be carried seven or eight inches above its normal position. The rectum will be found to curve upward in front of the tumor and will lie just behind the uterus or broad ligament, close to the abdominal wall. If the tumor is large a diagnosis of postrectal tumor can easily be made; if small, it may be necessary to open the abdomen to make an accurate diagnosis.

The history of the case will help us in coming to a conclusion. If malignant growths have occurred in other members

of the family, we must be suspicious that the growth under consideration may perhaps also be malignant.

When the abdomen is opened the position of the tumor will be readily ascertained, and such an exploratory incision may assist us in coming to a conclusion as to its nature. A puncture will ascertain the presence or absence of cystic contents. Such punctures should not be made, however, if the contents of the cyst are liable to escape into the abdominal cavity. Even after the abdomen has been opened, and after a trocar has ascertained the fact that the tumor does not contain cystic contents, the diagnosis will still be left in doubt. Even then the tumor may be fibroma or myoma or sarcomatous growth. This question is an important one to the patient, and it should be decided, if possible.

Vessels over the surface of a myoma or fibroma will look just as they do over the surface of a sarcoma. Puncture of either tumor may draw off considerable or but a small quantity of blood. The consistence of each is soft and brain-like if the former are edematous or fatty. If a portion of the tumor could be removed the microscope would soon settle the point, but it is not possible to remove a portion of the tumor without producing hemorrhage. A cutting trocar like a cheese tester might be of service. On one occasion I removed material with an ear scoop from a melanotic sarcoma of the liver that enabled me to make an accurate diagnosis.

They are all growths that do not invade the adjacent tissues. It has been supposed that the absence of cachexia and apparent good health point to the presence of a non malignant growth. In the one case of malignant disease recorded above there was distinct bronzing of the skin. In the three cases of innocent postrectal tumors no such appearance was to be noted.

I believe that the presence or absence of cachexia is of great value to the diagnostician. When we meet with myomatous tumors in other parts of the pelvis we do not see any distinct cachexia affecting the patients. The pain may be more severe and may become more intense at night as a consequence of the presence of sarcomatous growth. This is, however, an indefinite sign upon which to base a positive diagnosis.

Prognosis.—The prognosis depends upon the nature of the tumor. Enchondromata and osteomata are not likely to produce death. Small, slowly growing cystic tumors are not likely to produce death, but tumors that advance rapidly ulti-

mately produce a fatal termination from pressure effects. Even with sarcomatous tumors the patients may live for a considerable time.

Sarcomatous tumors, if removed, may recur. The other tumors will not recur if removed.

Treatment.—The treatment of these tumors requires elaboration. Cysts can be punctured from below and the cyst cavity may be obliterated. Dermoid tumors have been removed through an incision in the perineum. Even though cysts cannot be entirely removed, they can be punctured and the patients can in this way be relieved from the pressure effects. It will scarcely be wise to puncture such cysts from above during the exploratory operation, except with a small hypodermic needle for the purpose of diagnosis. They must either be drained from below, removed from below, or enucleated from above.

Sarcomatous, myomatous, fibromatous, and lipomatous tumors cannot be treated in this way. They must either be left *in situ*, with death staring the patient in the face at some more or less limited period, or they must be removed by enucleation, a very hazardous procedure.

Dr. Douglas, in a paper read before the Southern Surgical and Gynecological Society, 1897, says: "According to Mr. Cripps, retroperitoneal sarcomata do not recur when removed. From a careful investigation of the literature on this subject, I think the speaker was very safe in making this assertion, inasmuch as about 95 per cent of the patients die from the operation or before it."

The mortality of such operations has undoubtedly been great, but it is difficult as yet to give satisfactory statistics. We may be able to advance along this line, and to improve our technique to such an extent that we may be able to remove these tumors with greater success. Whenever a discussion of the subject has come up in medical societies, it has been quite evident that very few of the surgeons present had more than an extremely limited experience with such growths.

The hazard of the operation seems to consist in disturbance of the intestinal circulation. As a consequence gangrene ensues and resection of the intestine is required. If this resection is carried out subsequently to operation, it must necessarily be too late. The occurrence of gangrene must be foreseen and dealt with accordingly. All such growths will be found intimately related to the great vessels.

If the operator is convinced that the growth is sarcomatous, it may be well to leave it alone: but if the growth is of an innocent character, it seems sad to think that we must let the patient proceed slowly to certain death without making an effort to save the life.

In many of these cases the diagnosis can rarely be more than a surmise before operation, and even after operation we cannot be satisfied that the tumor is malignant. Small cysts may be left to be dealt with on some subsequent occasion; under such circumstances it is surely unwise to place the patient face to face with immediate death by the performance of a hazardous operation. With modern and surgical appliances, resection of the intestine is no longer to be feared as it was a few years ago.

No novice should undertake the removal of a postrectal growth. It can only be done by one who has become familiar with pelvic surgery and who is fully master of the situation. The operator must be full of resource and should be rapid in his movements. He must be thoroughly acquainted with the position occupied by the ureters and large vessels. In making his incision into the abdominal wall, he should always remember that the incision should be made high up and enlarged downward after the position of the bladder has been ascertained.

Up to the present time I have had no experience with the removal of such postrectal growths by enucleation from above. I am well aware that many thoughtful, prudent, and daring surgeons do not hesitate to close the abdomen when this condition is met with. Can we not go further and obtain results much more satisfactory than those obtained in the past? It is necessary to make an accurate diagnosis. Removal of tissue will enable us to do this. Are we not too timid regarding this removal of tissue? If the tumor is innocent and growing it should be removed. Death will ensue if it is not removed. If malignant, operation cannot be so strongly urged. If the tumor is a cyst, causing damage by pressure, it must be emptied, and perhaps both emptied and removed, to effect a cure.

What should the technique of such an operation be? Should we incise the meso-rectum close to or far away from the bowel? Should not the incision always be parallel to the vessels and not across them? How are we to accurately determine the situation of the ureters, and, when discovered, how are we to avoid them? How can we best guard against injury to the vessels? In

dealing with branchial cysts in the neck I have followed them almost to the spine, but have then left the deep portion of the cyst wall, if it could be called a wall. It seems to me that I would have been forced to deal with the last case I reported of presacral cyst, simulating closely, as it did, a branchial cyst, in exactly the same manner, because the periosteum and so-called cyst wall were so intimately connected. It would not be wise to drain such a cavity into the peritoneal cavity. Therefore it seems to me that it would be wiser to attack such cysts through the postanal tissues, perhaps with removal of the coccyx. The solid tumors should always be attacked from the front.

How are we to foresee gangrene of the intestine? If only the smallest spot of gangrene occurs it will be sufficient to produce death. If we are apprehensive, should we resect the intestine, or should we leave it outside of the peritoneal cavity as we do in cases of strangulated hernia? If we resect, how much need we remove? Gangrene of the intestine occurs sometimes upon slight provocation. I have seen gangrene of nearly six feet of small intestine follow the removal of an ovarian tumor. I operated on a man with gangrene of the rectum. The gangrene came on without apparent cause. With these facts before us, we feel that there is always danger of gangrene after the immense disturbance of the postrectal tissues incident upon the removal of postrectal tumors.

I beg to leave these few rambling thoughts with the Fellows of this Association as a stimulus for further reflection.

481 SHERBORNE STREET.

OBSERVATIONS RESPECTING MALIGNANT DISEASE OF THE PELVIC ORGANS.¹

BY

AUGUSTUS P. CLARKE, A.M., M.D.,
Cambridge, Mass.

IN presenting the subject of malignant disease for consideration, I am not unaware that much has by careful observation been already offered; and though no specific micro-organism has as yet been fully proved to be the direct cause of cancer, I

¹ Read before the American Association of Obstetricians and Gynecologists, at Louisville, September 18-20, 1900.

nevertheless feel that we have assurances, through the increased interest which has of late been taken in the investigation, that the mystery enshrouding the nature and origin of this peculiar morbid process will ere long be unfolded.

Emmet early called the attention of the profession to the fact that a neglected or an unhealed lacerated cervix was liable to become the seat of cancer. The recognition of the significance of such lesions marked an important event in the progress of gynecic surgery.

In referring to my notes of pelvic cases of malignant disease, I have often noticed with what frequency uterine cancer has had its starting point in such injuries. Cancer usually has its seat of development in the epithelium, sometimes in the squamous and at other times in the cylindrical cells. Its occurrence for the most part takes place after the patient has had several children and before she has become far advanced in age. The exposure of the mucous lining to continued and repeated irritation hastens its advent. The close observer cannot help noticing how easily the function of the mucous lining becomes disturbed or perverted, whether the influences be set up in the squamous epithelium of the vaginal portion of the cervix, in the cylindrical cells of the cervical canal, or in the epithelium investing the glands of the cervix. The delicate, sensitive or unresisting character of these highly organized parts renders them peculiarly prone to take on serious alterative changes, or liable to be affected by the influences of cancerous invasion.

On the other hand, the appearance of sarcoma is usually of a later date. It may occur in the mucous lining of the uterus or in the parenchyma of that organ. In whatever form it may present itself, and especially in the fibrosarcomatous variety, it seems to be the result of degeneration rather than the transformation of tissue, or, in other words, the structures where its greatest development takes place manifest a tendency to take on increase of growth of fibrous tissue at the expense of the integrity of the normal element.

Why this change takes place may be understood by appreciating the fact that the uterine tissue, as well as other portions of the sexual organs in the primitive types, have their origin in points where the skin fibrous and the intestinal fibrous layers have their more immediate connection. The interruption of function from cause determines the further growth along the lines of the earlier forms of animal life.

So far as malignant disease has invaded the vagina, consensus of opinion justifies the statement that the involvement of that portion of the genitalia with the disease in question is almost entirely the result of extension.

Cancer of the corpus uteri I have occasionally met with. The cases I have recorded have been the result of endometritis and of its allied conditions. One case which I have recorded impressed me very much; this occurred in a patient, a teacher in one of our public schools. Her age was 51 years; she was a well-developed woman and was never married. She had suffered from dysmenorrhea, though not of the aggravated form, and had received local and general treatment for the same. Her increased suffering had at first been thought to be due to the presence of a small fibroid; the result, however, showed that the disease was primarily cancerous, and must have been brought on or intensified by inflammation of the utricular glands of the uterus and by pressure from tight lacing.

Not long since I was called to a fatal case of sarcoma of the abdominal and pelvic organs. The autopsy showed that the disease undoubtedly began where excessive pressure had been repeatedly endured against the abdomen while the subject of it was employed for some years in carrying heavy packages up and down flights of stairs. Cancer affecting the broad ligament has usually been the result of extension of the disease from the cervix to the corpus uteri.

In one case my records show that the left broad ligament was apparently the original seat. The only explanation that could be offered was that there was near that site a considerable fibroid growth which had undergone calcareous degeneration and which exerted more or less pressure or irritation upon that particular part.

In another case that I met with was a cancerous deposit in the right ureter toward its renal portion. There was, however, a cancerous invasion of the cervix uteri, but no perceptible change was observed in the uterine body along which the disease could have extended, nor were the lymphatics involved. There was on that side a well-defined iliac aneurism, which had forced the peritoneum before it and had seriously encroached upon the ureter. The condition of things there found evidently hastened the cancerous invasion of the ureter.

Cancerous involvement of the bladder from extension of the disease from the cervix or from the lower portion of the uterus

is not uncommon, but cancer about the meatus is not so frequently met with.

In a case to which I was called in consultation the patient had given birth to a child but a few weeks before. She had begun to suffer more or less from retention of urine, accompanied with severe pain and irritation about the external opening of the urethra. Examination showed a slightly raised fungoid mass about the urethral meatus and just below it on the vaginal aspect. Some difficulty at first was experienced in determining the exact nature of the condition, since there were no involvements of the glands and no cervical or other original seat of invasion. Further examination microscopically and otherwise gave positive assurances of the cancerous nature of the growths. Not long after that the patient entered the city hospital, but no surgical measures for the removal of the morbid mass were deemed justifiable. The patient returned home and died within a few weeks of urethral cancer involving the vagina. The lymphatics toward the close of life had become extensively involved. The history of the patient showed that she had suffered, even before her last pregnancy, from vesical and urethral disturbances.

Cancer having its original seat in Douglas' posterior cul-de-sac may occur. A case came in January, 1898, under my care. The uterus was displaced forward and the rectum was forced to the right; the lymphatics became implicated.

Small sarcomata occurring in the pelvic connective tissue may be productive of misleading symptoms. I have seen at least two such cases. One of these was exceedingly difficult to diagnosticate, and its true nature could not be clearly established until after noting in detail the deficiency of the operation of all other possible factors.

Formerly I was accustomed to regard cancer as a disease consisting originally of different varieties. More recent observation has impressed me that such terms as medullary, scirrhus, colloid, and the like should be excluded from the division or should be employed only when speaking of the general appearances of cancer and not of distinct classes. Cancer has its starting point in the epithelium, whether this be the stratified, squamous, or columnar, or in the epithelial cells of the cervical glands. In this last-mentioned site the cancer may be hard (scirrhus or adenoid), not because the cancer is of a different variety, but on account of the morbid influence of the affected imprisoned epithelial cells on the surrounding

glandular structures. It has long since been determined that the various forms assumed by epithelial cells depend almost entirely on mechanical pressure exerted upon them by corresponding and surrounding parts. The hexagonal forms of the cells of the comb produced by the honey-making bee are effected also by mechanical influences. The varieties in the shape of sarcomatous cells have undoubtedly been the outcome of physical influences to which the parent bodies were long subjected. As the epithelium is a layer of protection to the structures which it invests, it necessarily becomes exposed to many morbid influences. Such cells, when their integrity has been overcome through traumatic lesions, bacterial or cancerous invasion, readily furnish, notwithstanding any peculiar form they may possess, centres or foci for the malignant deposit.

Cancer of the ovary or of other portions of the adnexa may occur as a secondary to a primary point of invasion. The epithelial cells, being invaded by the cancerous products, sometimes quickly yield to the destructive agency. Cases of this kind I have not infrequently seen. The route of transmission is usually along the course of neighboring lymphatics. In one case the infected cells were conveyed directly through such lymph channels; in other cases the metastasis took place by the direct infection of the epithelial cells of the ducts of the lymphatics. In a case seen a year and a half ago there was found a solid cord-like mass of the lymphatics extending from the junction of the internal cervix and the corpus uteri to the right ovary. It is no uncommon occurrence to observe metastasis to the liver or to the spleen to take place after excision of a cancerous breast.

The fact that cancer cells may invade or attack the epithelium of new-formed growths, such as a cystoma, myxoid cystoma, dermoid cyst, or any cystic development containing endothelium, shows the importance of taking measures for the early removal of these formations before degenerative changes shall, by such involvement, have extensively occurred.

I was invited by Dr. Marcy to see a case in which was to be removed a growth from an ovary. The mass was about the size of a hen's egg; it was cystic and gave distinct evidence of cancerous infiltration of the epithelium of the Graafian follicles. The specimen was extremely interesting as illustrative of the peculiar manner in which the malignant processes sometimes

have their starting point. In this way the pelvic peritoneum, the mesentery, and the omentum, either on the free surfaces in the epithelium or in the epithelium of the glandular portion, become the seat of cancerous manifestation.

The morbid development undoubtedly arises at times by abnormal proliferation of the epithelium from its basic point of origin to the deeper structures within. Though not adopting the theory as once propounded by Cohnheim, I have nevertheless noticed that a plentiful development of the vascular tissue surrounding the implantation of cancer has been favorable to the growth and extension of such neoplasms.

The pain complained of in cancer is occasionally very great; at other times it is not severe, and there may not be much tenderness. The amount of suffering from cancer frequently depends very much on the situation of the growth, whether it involves the glandular epithelium and thus causes undue pressure on plexuses or portions of important nerves. I have met with cases in which the greater portion of the uterus had become affected and still there was scarcely any pain. On the other hand, a small growth embracing the epithelial cells of the cervical glands I have known to produce most disturbing symptoms. After the general cachexia has become manifest, the implication of the nervous system through the deteriorating effect upon the blood supply may give rise to exceeding suffering.

Cancer of the bladder is not altogether an uncommon form of malignant disease encountered. The majority of such cases occur as secondary to cancer of the cervix or of the lower segment of the uterus. Utero-vesical fistula may be one of the sequelæ of the attack. Such cases, however, are of the advanced forms and are often inoperable.

The cases which call for special consideration are those of the villous type. A few cases of the chronic variety of this class I have chanced to meet. One of these occurred in a woman who, when I was first called, had already passed the menopause. She had been a nurse for some years; she had grown stout, but within the past two years had lost flesh. She had been troubled more or less for some ten years with painful urination, accompanied at times by the passing of small quantities of blood. Under ether the meatus urinarius and urethra were dilated; digital examination revealed a partially villous mass situated slightly posterior to the opening of the right ureter in the bladder. Thorough curettement and the employment of the galvano-cautery effected for a while considerable

relief. There was, some eighteen months afterward, a recrudescence of the disease, which at last could not be overcome.

Cancer of the rectum is another form of malignant affection that can sometimes be stayed in its progress by operative treatment. In those cases in which the sphincter ani is not involved, excision of a portion of the rectum and the employment of Murphy's intestinal button, after removal of the coccyx and lower section of the sacrum, can sometimes be advantageously resorted to. This was done in some of Dr. Marcy's earliest improved operative cases of rectal cancer in which I was invited to assist, and the operation after this manner proved a typical method of surgical procedure.

In the treatment of cancer the instituting of proper methods for reaching an early and a correct diagnosis cannot be too strongly insisted upon. The only effectual radical method of treatment worthy as yet of that name is by excision or by the liberal employment of the actual cautery. The partial removal of the uterus for its extensive invasion by malignant disease will not suffice. Nothing short of total ablation of the organ and its appendages, either by the abdominal or by the vaginal route, or by a combination of both, will prove of much continued benefit. I do not mean to say, however, that in some cases of most unpromising type curettement and the removal of sloughs may not be helpful or justifiable procedures, but such operations, or rather expedients, cannot be expected to prevent an almost immediate return of the morbid processes. They can only be regarded as provisionally esthetic in their results.

The fact that uterine or pelvic fibroids and fibromyomata in their retrograde processes take on malignant or sarcomatous transformation is, I believe, coming more and more to be recognized. The necessity of keeping a close watch for the changes which they may assume will therefore become obvious. Both the round and the spindle-shape-celled sarcomata are liable to originate in such benign fibroids; their nodules or projecting masses develop without the investment of regular capsules. They subsequently undergo disintegration and present unmistakable evidence of malignant deterioration. Cases presenting the phases of this character have come to my observation. Total excision of the part embracing the neoplasm in its earliest stages, when possible, will afford the most satisfactory result.

ACUTE SENILE ENDOMETRITIS.¹

BY

L. H. DUNNING, M.D.,

Professor of Diseases of Women, Medical College of Indiana, University of Indianapolis,
Indianapolis, Ind.

SINCE the preparation of the paper read by me at the meeting of the American Medical Association at Atlantic City, several other cases of acute senile endometritis have come under my observation and treatment. These cases possessed, in the main, features characterizing the two cases reported in the paper, and confirm my belief that acute senile endometritis is a lesion distinctly inflammatory in character, dependent upon infection, and differing essentially in its course from acute endometritis before the menopause only in consequence of the difference, anatomically and physiologically, of the organ the seat of the lesion.

In the elucidation of the subject an elaborate comparison of these differences is not necessary, as they are familiar to all of you. Briefly, some of the differences influencing the course of the acute inflammation in the functioning and non-functioning uterus may be stated as follows:

In the functioning organ the vascular supply is exceedingly abundant, tissue changes and the reparative processes active; indeed, it must be evident to one who looks into this subject carefully that the healthy uterus during the menstrual epoch undergoes quite as great changes and has as great powers of resistance as any organ of the human body. Quite different is the postclimacteric uterus. It is in a quiescent state. The circulation is markedly diminished, atrophy of its tissues has taken place, its power of resistance is slight, and its ability to repair damages greatly lessened. In it, as in all tissues of old age, degenerative changes are prone to occur.

The functioning uterus is subject to periods of physiologic activity and rest—a condition conducing to the maintenance of a high state of health and to the exercise of great powers of resistance and repair. The senile uterus is in a state of physi-

¹ Read before the American Association of Obstetricians and Gynecologists, at Louisville, September 18-20, 1900.

ologic rest—a condition favorable to a longer period of existence, provided no untoward circumstances arise, such as trauma or infection, to lead to active degeneration. The powers of resistance and repair are so feeble that the infliction of any severe injury is prone to prove destructive.

In the functioning organ an acute inflammatory process is very active; the battle rages, and the powers of Nature are often sufficient to restore the organ to health. In the senile organ it is languid; the battle is less furious, but more prolonged and more destructive.

Pathology.—In the commencement the inflammation may be limited to the cervix, but, as a rule, speedily involves the whole mucosa. The vaginal portion is usually involved, the surface about the os being covered by a purplish-hued area, dotted here and there by minute depressed ulcers, or there may be isolated patches which are sensitive to the touch and bleed easily. The external os is patulous. In one recent case there were hanging from the os two small mucous polypi. The cervical canal, which is short, may be patulous or contracted; usually, I believe, it is patulous. In no case I have seen has there been any difficulty in passing the uterine sound into the uterine cavity, and yet there has been in all cases a retention of fluid within the uterine cavity. This is usually sanguino-purulent and of very offensive odor. I was at a loss for some time to account for the retention of the fluid when the sound passed so easily, especially in those cases in which the uterus was in normal position, but finally found what seems to me to be an adequate explanation of the fact. In all instances of retention the fluid was thick and mucilaginous, and in some instances contained small clots. This retards the flow, and, indeed, sometimes partially seals up the opening, exactly as we sometimes find the incision or opening of a partially filled pus cavity agglutinated, though the incision or opening be large enough to easily admit the passage of a finger.

Again, the drainage of the normal uterine cavity is effected not by gravity alone, but by gravity aided by movements of the cilia and rhythmic uterine contractions. In the senile uterus the cilia have disappeared, as have also the rhythmic contractions.

The size of the uterus varies according to the amount of distension of its cavity and the extent of the infiltration. In all instances I have seen it has been larger than the normal post-climacteric uterus. In one instance the cavity measured two

and three-fourths inches. The increased size is not due to a thickening of the walls alone, but a dilatation also. The uterus may be in normal position, but is quite frequently retroverted.

A combined examination, always difficult after the menopause, is often unsatisfactory in acute senile endometritis, on account of the inelastic and sensitive condition of the vagina. It should, however, be effected, under anesthesia if necessary, for the reason that diseased appendages are not infrequently present, and, when present, influence the course of the disease and line of treatment.

In both of the instances in which I did hysterectomy for this lesion, there was disease of one appendage and in one slight pelvic peritonitis. In all cases the writer has seen there has been present a moderate degree of senile vaginitis.

Regarding the morbid histology encountered in cases of acute senile endometritis, I cannot do better than to quote the summary of my elaborate pathological report contained in the former paper. It is as follows:

“The characteristic pathologic features of the inflammation are: (a) A thickened endometrium, the free surface of which is devoid of its epithelial layer. (b) Increased vascularity with peculiar arrangement of small blood vessels. (c) Small round-celled infiltration. (d) Diminished glandular elements. While a few glands are distinctly to be seen in many of them, the epithelium is desquamating and the lumen filled with granular debris. They may be said to be functionless glands. (e) Degeneration of the coats of the arteries of the muscular layer of the organ. In one specimen the degenerative process is distinctly hyaline. (f) In not one section examined from various parts of the organ could there be seen any excess of connective tissue.”

In addition to this summary it ought to be said that the inflammation has a tendency to spread beyond the limits of the endometrium and into the Fallopian tubes. Evidences of this are found in the round-celled infiltration of the muscular layer and in the degeneration of the walls of the blood vessels in the same structures, also in our ability under microscopic examination to trace the inflammation from the tissues lining the uterine cavity into the Fallopian tube and outward along the mucous membrane of that organ, as far, in one case, as three-fourths of an inch beyond the uterine cornu. This I deem of importance, as showing the tendency of the inflammation to spread to the uterine appendages and the pelvic peritoneum, resulting,

in some instances, in pus accumulations within the tubes and ovaries or leading to pelvic adhesions.

If our observations and conclusions in this respect be true, we have here an explanation of the etiology of many of the cases of pelvic abscess¹ in old women, the causes of which we have heretofore thought to be inexplicable.

Dr. R. H. Ritter, who made the microscopical examination in the cases reported in the paper already referred to, called my especial attention to the distribution of the small blood vessels in the endometrium. In his report he said: "The minute blood vessels with which the endometrium is abundantly supplied often run to the surface and seem to end at the surface. I believe the hemorrhage which had evidently taken place from the mucosa was due to the erosion of the minute blood vessels which I have described and whose blind ends may be seen at the surface. It has been a direct hemorrhage rather than a diapedesis."

Causation.—Unquestionably many cases of endometritis after the menopause have their origin in an inflammation of the endometrium antedating the climacteric. The process has been a continuous one, extending over a period of years, and during the progress subject to varying degrees of intensity, chronic for the main part, yet showing periods of acuteness, trauma, local irritation, or renewed infection acting as exciting causes.

Unquestionably, too, there are cases of endometritis that appear in women for the first time many years after the menopause. I have seen two such. The sources of trauma and infection are numerous and identical with those operative in the younger patient, omitting those, of course, of puerperium and menstruation.

For obvious reasons gonorrheal infection is not so liable to occur in the aged. We can readily see how the elimination of these active causes of inflammation are favorable to the infrequent occurrence of endometritis in the aged. Displacements of the uterus may act as a cause of the lesion. Retroversion has long been recognized as a cause of endometritis. It is a more active cause after than before the menopause, and this is because of the very imperfect drainage of the uterus. The retained secretions become purulent and

¹ One instance of this kind was recently seen by me in a woman eight years beyond the menopause. The pelvic abscess appeared some six weeks after the beginning of the muco-purulent discharge from the uterus.

fetid and tend to make the inflammation more active and persistent.

Skene¹ emphasizes the influence of fibroid tumors of the uterus as causing senile endometritis. I recently saw a case in which the inflammation was very acute, accompanied by quite a profuse, bloody, fetid discharge in which two mucous polypi were attached to the anterior lip of the cervix. The case had very much of the appearance of one of cancer of the uterus. Unquestionably in some instances the inflammation of the endometrium may be an extension of the inflammation in senile vaginitis, and it is oftentimes difficult to determine which lesion first existed.

Further observation and study is requisite to determine the influence of gonorrheal infection upon the lesion in question.

Symptoms and Course.—This form of inflammation appears abruptly. The most pronounced symptom is a fetid discharge from the uterus. It is usually at the onset a thin, purulent discharge, but, as a rule, very soon becomes sanguino-purulent. If the discharge be bloody it is usually thick and has a most horrible odor, and may be intermittent. It is not usually abundant, but not infrequently is very dark, almost tarry, in appearance. In all cases it is more or less irritating to the vagina and labia. Pain and soreness through the pelvis is uniformly present. The pain is not intense. It has been described to me by patients as being a sore pain with the appearance of an occasional sharp pain. The back aches and is lame; usually there is vesical tenderness, and more or less pain upon defecation. In cases in which the uterus becomes distended, after a time there is a feeling of fulness in the hypogastric region, expulsive pains come on, a free discharge occurs, and there follows a period of relief. It is probable, indeed I think certain, that in a considerable per cent of these cases, if left to themselves—*i.e.*, treated only by douches—after a time the acute stage will pass, to be succeeded by a chronic process lasting indefinitely, or the course of the disease may be marked by the occurrence of acute exacerbation. Unquestionably, in the more acute cases, the general health is markedly impaired. In one of my patients there was a considerable loss of flesh and a pronounced sallow complexion, so that the general appearance of the patient strongly suggested a malignant disease.

In what has been said regarding the process of the disease,

¹ New York Gynecological and Obstetrical Journal, June, 1894, p. 644.

we would expect that in a certain per cent of cases pelvic inflammation would develop, together with disease of the uterine appendages.

The only disease for which acute senile endometritis is likely to be mistaken is cancer of the uterus. The history, the general course of the disease at the onset, and the appearance of the patients are very similar; but if it be remembered that in carcinoma there is neoplasm, while in senile endometritis there is none, except when due to a sloughing fibroid, a mistake is not likely to be made. If there still be doubt, a microscopical examination of the uterine scrapings would render clear the diagnosis. If left to itself the disease may prove fatal in consequence of the development of suppuration within the appendages and pelvic tissues, finally resulting in a pelvic abscess or true septicemia, or the acute process may gradually merge into a chronic one, dragging on a weary course extending over many years.

Treatment.—The treatment of acute senile endometritis must, to some extent, depend upon the intensity of the inflammation and the extent of the secondary lesions.

Where the appendages have not become involved a thorough dilatation of the cervical canal, douching the uterine cavity with an antiseptic solution, a careful yet thorough curettement with the sharp curette, the application of a caustic such as acetic acid or pure carbolic acid followed by alcohol, and finally establishing and maintaining good drainage, will result in a cure in most instances. In my case of large pelvic abscess complicating the disease a cure was effected by curetting the uterus and draining the abscess through a vaginal incision.

If there be retroversion this displacement must be corrected by appropriate means, and if the remnants of a sloughing fibroid be found it must be removed. This can usually be accomplished by a sharp curette. If it cannot so be removed a vaginal hysterectomy may be resorted to.

Should the uterine appendages be found markedly diseased they should be extirpated, as well as the uterus, by the vaginal route.

PAPILLOMA OF THE VULVA.¹

WITH SPECIMENS.

BY

EDWARD J. ILL, M.D.,

Newark, N. J.

(With plate and one illustration.)

THE specimen presented herewith was removed from Mrs. B. She was 58 years old, came under my observation November 11, 1897. She was married, had had several children, and never had a serious illness. She had a normal menopause at 51. At present she has no vaginal discharge of any kind.

A year ago she noticed a growth about the vulva. It produced neither pain nor inconvenience at first, but lately intolerable itching. On examination it appeared that both inner surfaces of the vulva were thickened at some places, appearing horn-like, white, and smooth. At other places there were hard, heavy papillæ, which rose considerably above the surrounding tissue, and were from 3 millimètres to 15 millimetres in diameter at their base. The flattened surfaces were noticed more frequently on that portion of the vulva where the opposing labia produced pressure upon each other, while the elevated papilliform masses were situated at the free border.

The disease extended from the beginning of the vulva above, down to the posterior commissure. It covered the whole vestibule except the tissue immediately surrounding the external meatus of the urethra, and was well defined to, but stopped at, the vaginal mucous membrane. The vulva, as a whole, stood out far beyond its normal elevation. The curette made no impression on the masses. The diagnosis of a diffuse non-malignant papilloma of the vulva was made at this time. The patient objected to any operation and was told to keep the parts clean with green soap and a boric acid solution.

She was to return if no better. The treatment, however, made her so comfortable that she did not return until October 4, 1899, nearly two years after the first visit. She had become

¹ Read before the American Association of Obstetricians and Gynecologists, at Louisville, September 18-20, 1900.

Forbaird



Diffuse Non-Malignant Papilloma of the Vulva.—III.

tired and wanted an operation. At this time there was no material change about the parts from that described above.

She was operated upon on October 19, when I removed the whole vulva, the labia majora and minora, the clitoris and vestibule close to the urethra, and mucous membrane of the vagina. The incision was carried well into the cellular tissue

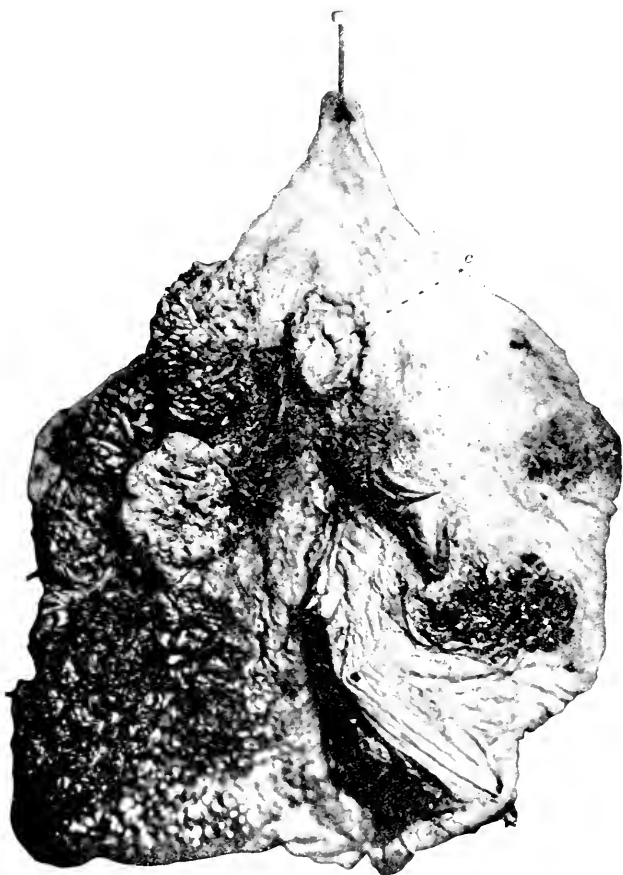


FIG. 1.—Papilloma of the vulva: c, clitoris.

all over. The healthy skin was drawn across the defect above and to the urethra and vagina below, leaving a tolerably normal-looking vulva. Six spurting vessels were ligated. At the present time there has been no report of a recurrence.

An examination of the specimen under the microscope, as kindly reported to me by Dr. F. R. Bailey, shows it to be

"papillomatous in character and of a structure corresponding to that usually found in papillomata of the skin. There is a substratum of new connective tissue of varying density, as found in fibromata, and over this a thick, dense covering of epithelium having a papilliform arrangement. Some parts of the connective-tissue substratum show an inflammatory reaction by the presence of more or less small round-cell infiltration."

Another case which came into the writer's hands was seen in December, 1881, with his friend and colleague Dr. Balleray, of Paterson, N. J. This woman was 40 years old and had suffered for some years. At that time Dr. Balleray removed such portions of each side of the vulva as seemed diseased and sewed up the wound. In 1894, thirteen years after the operation, the patient came into my hands with such an extensive relapse that I removed the whole vulva. During all of these years the patient suffered much with local irritation and dyspareunia. The pathological condition of the specimen removed by Dr. Balleray, sections of which are still in my possession, agreed with the case described first.

While papillomata of the vulva are not rare, this particular diffuse form must be of great rarity. These are the only two cases of this character that I have ever seen, and I am unable to find any description that agrees with the condition under consideration.

1602 BROAD STREET.

SIMPLE METHODS IN PELVIC SURGERY.¹

BY

JOHN B. DEEVER, M.D.,
Philadelphia.

SIMPLICITY is the *sine qua non* of good surgery. The fully developed, well-rounded surgeon can be recognized by the manner in which he performs his operations. He depends upon skill and applied knowledge rather than upon instruments, for there is no instrument or mechanical device which can replace or equal perfected manual dexterity. When one sees a great array of instruments and mechanical appliances

¹ Read before the American Association of Obstetricians and Gynecologists, at Louisville, September 18-20, 1900.

in the operating room, one of two things can justly be suspected: either the surgeon is capable but has little confidence in himself for the particular operation to be performed, or he is incapable. Every surgeon is constantly striving to reduce his technique to the simplest possible form, until he feels capable of performing operations of magnitude with so few instruments that he may go to an operation with his kit in his coat pocket, as one of my friends has cleverly put it, or, like my friend Price, with so few instruments that he can carry them in one of his vest pockets.

Simplicity means safety, surety, confidence, neatness, and a great saving of time, which is an essential factor in the success of many operations.

In pelvic surgery there are several methods by which the above-mentioned desirable factors may be accomplished. It is my intention to bring them to your notice, with the reasons why they are used and the purposes accomplished.

The abdominal route is by far the more rational, and therefore the best way of approaching an operation on the pelvic organs in a large proportion of cases, and offers several advantages that render it preferable to the vaginal.

1. It is simpler of performance.
2. It is safer, as one can avoid distributing infection where infected areas are present.
3. It reduces the danger of general peritonitis by use of gauze packing.
4. It renders injuries to the bowel, ureters, important blood vessels, and adherent organs less likely.
5. It minimizes the danger of hemorrhage.
6. It aids generally by the facility offered for inspection. Through the abdominal incision the surgeon is able to open the abdomen to the proximal side of the infected area, when, by the proper disposition of sterile gauze sheets, practically all risk of peritoneal contamination is done away with.
7. It enables the surgeon to operate with a very few instruments.

In many cases of pelvic disease there will be encountered an infected area or infected areas, through which the surgeon must work if he chooses the vaginal route. Through the abdominal incision he is able, in the majority of instances, to avoid trespassing upon the infected area until he is prepared to attack it, and thus render the spread of infection very much less liable.

One of the greatest advantages of the abdominal route in simplifying pelvic manipulation is by the use of the Trendelenburg position in certain cases. I would not have you understand that I employ it in all abdominal cases; far from it. By using this position two great objects are accomplished, viz., reduced possibility of spreading infection, and the opportunity of seeing, if need be, what one is doing. With the bowels out of the way by means of this position, and then retention by gauze packing, infection is reduced to a minimum. The simplicity of a pelvic operation when one can see the condition has only to be seen to be realized. Let us, for example, take a bad case of pyosalpinx with adherent bowel, omentum, etc.—yes, everything in the pelvis apparently tied up into one solid mass—and then try to enucleate and excise by the sense of touch, be it ever so highly developed, and I am sure that the mortality and the morbidity of such operations will be higher than when the same manual dexterity is aided by the sense of sight. I know of but comparatively few operations upon the pelvis which cannot be better performed in less time and with more satisfactory results by the aid of the Trendelenburg position and gauze packing.

The number of instruments needed is very few; one-half dozen hemostats, knife, scissors, tissue forceps, pedicle needle and ligatures and needle and sutures, are all that are required for the most extensive operation. The whole success depends upon the skill of the operator and his opportunity of inspecting from time to time the field of operation.

It has been said that all things go in cycles—fashions, ideas, politics, religion, etc.—and along with these must be classed surgical instruments and ideas. For example, we have the angiotribe, an antediluvian, antiquated, useless, and dangerous instrument which should be relegated to the realms of barbaric surgery. Why any one should go back to such an instrument, in the light of the twentieth-century surgery, is an unexplained condition of cycling which should be classed with the “young ideas learning how to shoot.”

Radical operations per vaginam are, with few exceptions, I think, to be discountenanced, for several good and sound reasons:

1. The limited area for manipulation.
2. The impossibility of inspection without destruction and removal of the uterus, which should not be removed except for disease of that organ itself.

3. The marked increased liability to hemorrhage, both primary and secondary.
4. Increased danger of injuring ureters, bowel, bladder, and large blood vessels.
5. Danger of doing incomplete surgery.
6. Inability to repair satisfactorily injuries to bowel or bladder, etc.
7. Inability to deal safely with an inflammatory mass which involves the vermiform appendix.

I believe it good practice to remove the appendix, when having the abdomen open for other reasons, if it can be done without added risk to the patient, as I know that every human being who is without an appendix has a better chance in the struggle for existence than he who is menaced by the treacherous and touchy little organ. The abdominal route offers the chance and the vaginal does not, for I have never heard of a vaginal-route advocate who claims that advantage for the method.

Not all cases of pelvic inflammatory disease have their origin in the uterine adnexa. A percentage originate in the appendix, the pelvic organs becoming infected secondarily, as I have seen time and again. This is particularly so where the terminal portion of the organ occupies the pelvis. What surgeon can deal with this condition safely and ideally by the vaginal route?

1634 WALNUT STREET.

TUBO-OVARIAN ABSCESS AND HOW BEST TO DEAL WITH IT.¹

BY

EDWIN RICKETTS, M.D.,
Cincinnati, O.

GONORRHEA in the female oftentimes causes a pyosalpinx, and on account of the close proximity of the ovary to the wall and fimbriated extremity of the Fallopian tube, the same is frequently infected, bringing about tubo-ovarian abscess. During the last decade and a half this has been proved by rich clinical observations and demonstrated by special efforts on special lines in our surgical art. The ovarian infection resulting in an abscess is secondary to that of the tubal, and there is a

¹ Read before the American Association of Obstetricians and Gynecologists, at Louisville, September 18-20, 1900.

communicating pus channel. The tubal part of the abscess may be large, while the ovarian may be small, and *vice versa*. The ovarian part may be high up, while the tubal may rest well on to the pelvic floor, and then both may come in contact with the pelvic floor. It has been mistaken for other diseased conditions that may be within the pelvis, and frequently has not been differentiated until after the abdomen has been opened. Enucleation without injury is not an easy procedure, even after the abdomen has been opened. Its contents are generally most virulent, and should the field of operation be flooded with them great risk is added to the operation. Microscopic investigation during the operation, to settle the question of the virulence of the contents, has not been of any reliable assistance and takes up valuable time.

The disease is unilateral more often than bilateral. It may be complicated by normal or ectopic pregnancy, intestinal, vaginal, or vesical fistulæ. When on the right side appendicitis may prove to be a serious complication. Vaginal incision is not followed by that degree of shock which follows an abdominal section. This is especially true after abortion or in those cases of tubo-ovarian abscess following delivery at full term. It is true that vaginal drainage under anesthesia has an advantage over abdominal section, putting the patient in better shape for a final effort by the abdominal route one month or twelve months later. In other words, we must take two bites at this pelvic cherry if we are to act for the best interest of our patient. In those cases which are not complicated and in which a large abscess with a thin wall is recognized after the abdomen has been opened, in poor subjects for operation, it is best to consider the advisability of draining per vaginal section without an attempt at enucleation. In those cases in which there is a fistula, large or small, communicating with the intestine, vagina, or urinary bladder, it is always best to drain before attacking the same by the abdominal route. To correctly diagnose, the abdominal route offers most, but to adhere strictly to this route under all circumstances is more expensive than to drain primarily by vaginal incision, letting the abdominal route come in as a secondary procedure, if deemed advisable. With an ectopic pregnancy as a complication, the same had better be removed, and the tubo-ovarian abscess simply drained per vaginam, unless the walls are thick and you are positive that it can be enucleated and removed without rupture.

FIBROMA OF THE OVARY.¹

BYL. H. LAIDLEY, M.D.,
St. Louis, Mo.

(With three illustrations.)

FIBROMA of the ovary² is among the rarest of the pelvic tumors and is characterized by a multiplication of connective-tissue elements of the ovary at the expense of all other histological constituents, the entire organ being involved, becoming converted into a fibrous ovary, which may rarely contain degenerative cysts or dilated blood and lymph spaces. Alban Doran reported among the first this form of disease involving one ovary, while Cullingworth reported two in the same pelvis. Leopold reported fifty-nine cases, but nineteen are examples of true fibromata, and he infers that some of these were sarcomata. Coe collected more than twenty authentic cases in addition. Kelly reports in twelve hundred abdominal sections four cases, while Löhlein found seven in one hundred and seventy-two cases of ovarian tumors. Twice they were bilateral. It is hard to give a correct statistical statement of their occurrence, for such a statement should be based only on cases examined microscopically by competent observers using modern methods. Usually they are small in size, while some have been observed to weigh as much as twenty pounds, as was recently reported by Fleishman, of Vienna. They are described as densely hard, pinkish or white in color, covered with smooth peritoneum; the fibrous growth is never disposed, like a uterine fibroid, in a bed from which it can be shelled out. In their development they do not form circumscribed new growths, but seem rather to be a kind of fibrous degeneration of the ovary, which is so uniformly hypertrophied that its shape and relations are not altered. Leopold points to the fact that the tubes remain free, instead of a part of the tumor as in cysts. Rokitsansky describes an interesting form of this disease

¹ Read before the American Association of Obstetricians and Gynecologists, at Louisville, September 18-20, 1900.

² Kelly.

derived from the corpora lutea in the development of ovarian fibromata. They are usually hollowed out into little "geodes" containing fluid. It is difficult to decide whether these cavities come from the Graafian follicles, from limited points of molecular disintegration, or from the dilatation of lymphatics, the latter of which is probably the true theory. The structure of these tumors is chiefly fibromatous in the true sense of the word. There are many connective-tissue fibres and few or no unstripped muscular fibres. If so, a misconception of the origin of the neoplasm has been conceived.

The cause of this form of tumor is not well understood. Some authorities claim that it is the result of inflammation. If that were true a greater number would be observed. The diagnosis of fibromata of the ovary is difficult, being confounded with uterine fibroid with a long pedicle. When an unusual hardness with ascites is found, such may be suspected, but an exploratory incision is required to decide the question, and even then it is safe to conclude that all tumors may be malignant until the microscope determines the true nature of the disease.

The following is probably the true pathology of fibromata of the ovary:¹

1. Fibrous tumors may, and do, arise from the ovary, independent of the uterus or the other adnexa.

2. In structure these tumors are true fibromata, yet peculiarly rich in long spindle cells which closely resemble those of the normal stroma; hence,

3. These fibromata originate, not by a local change, but as the result of a general hyperplasia of the ovarian stroma. Moreover, there is nothing to show that this process is of an irritative or inflammatory character.

4. Cystofibromata of the ovary, like those of the uterus, are of secondary formation and result from changes in previously solid tumors.

5. The majority of these cysts probably arise from the so-called "geodes" or "gelatinous patches."

6. These "geodes" do not represent any form of degeneration at all, but are dilated connective-tissue spaces filled with a coagulable serous fluid resembling lymph.

7. The "geodes" are probably dilated lymph spaces, which expand by reason of the accumulated fluid in their interiors—a condition due to a general stasis.

¹ Coe.

8. Simultaneously with the lymph stasis, there often exists a disturbance of the blood circulation, giving rise to edema, extravasation, and various local changes, but these are factors in the subsequent growth, not in the origin of a "geode."

9. Commencing cysts grow by increase of the contained lymph, by accessions of blood and serum from adjacent vessels, and by degeneration of the surrounding tissue.

10. The fluid found in these cavities has originally the properties of lymph, but becomes so changed by intermixture with other elements that its examination for clinical purposes does not furnish positive results.

a

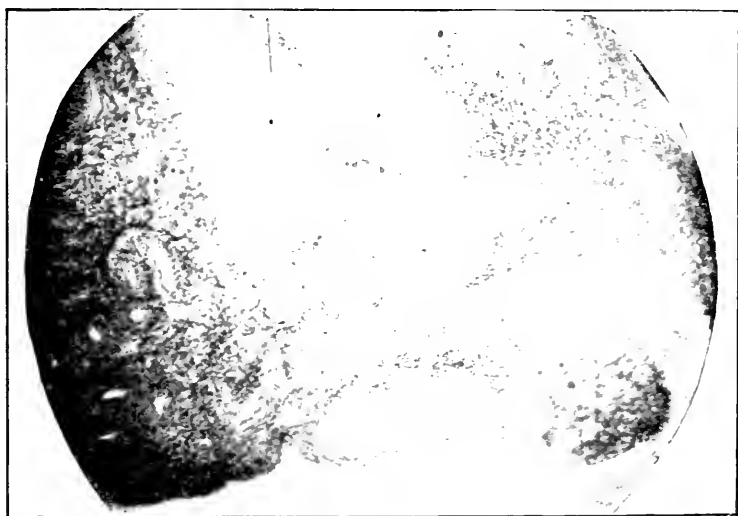


FIG. 1.—Portion of cortical layer with hyaline degeneration of walls of arteries.

11. The ultima causa of dilatation of the lymph channels and consequent cyst formation in fibroid tumors is unknown. Clinical observations lead to the inference that, in many cases, the active influences are within the growth itself.

I may be pardoned for presenting to you a short history of this rare form of neoplasm in connection with the report of the specimen I now present to you, as follows:

Mrs. H., age 29, married, usually enjoyed good health—with the exception of almost complete deafness due to a specific disease for which she was treated some fifteen years ago—became pregnant, and was delivered of a healthy child about two months before the removal of the tumor. She had noticed

a tumor in the region of the left ovary about two years ago, hard and slightly movable, which continued to grow to the size of two fists. In the development of pregnancy it was pressed upward on a line with the umbilicus and could readily be felt in her left side. There was no pain nor discomfort from its presence up to the tenth day after her delivery. She had a favorable "getting up," when, on the fifteenth day, she had fever with pains, causing her to again take to her bed. This

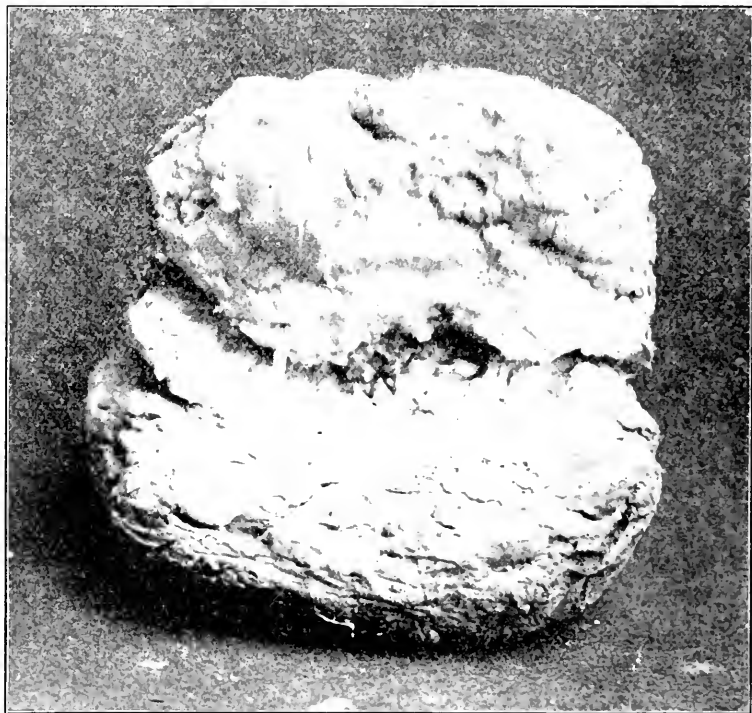


FIG. 2.—Diffuse fibroma of the ovary.

continued until I saw her two months later. Upon examination, found the lungs, heart, and abdominal viscera in normal condition. There could be readily felt and seen a hard, immovable tumor in left umbilical region, with considerable ascitic fluid in the cavity. On January 20 an abdominal section was made, revealing a solid tumor adherent to the anterior wall of the abdomen, which was detached. Posteriorly the folds of the bowel were adherent to that portion,

which was also dissected off, freeing the tumor. kidney-shaped, hard, with short pedicle, one inch in diameter by two inches in length, which was ligated and the tumor removed. In tying the ligature it readily cut through its peritoneal covering, but secured the stump from hemorrhage. Upon examining the remaining organs, the stump of the pedicle occupied the location of the ovary; the tube remained distinct and separate from the tumor: the opposite side showed a healthy tube and ovary; there was considerable hemorrhage from the surface bleeding following the operation, but with that exception there was no difficulty encountered. The patient made an uninterrupted recovery.



FIG. 3.—Portion of external layer. *a*, old corpus luteum.

The following is a description of the tumor: weight, 32 ounces; measurement, 6x5x3 inches. The following is a histological report: The tumor is of ovarian origin, as shown by remnants of the cortical zone, with distorted and compressed follicles and corpora lutea. It consists almost entirely of a mass of thick fibrous tissue with comparatively few connective cells. The intercellular fibrillar substance is very massive and has in many places undergone hyaline change. In other places edematous infiltration has taken place, with a swelling of the cell bodies, giving the tissue a myxomatous appearance. There are larger and smaller areas of round-cell infiltra-

tion, the lymph spaces and channels around these areas being widened; the cells of their endothelial lining are seen in a state of proliferation, forming now and then groups reminding the observer of endotheliomatous changes. Larger and smaller portions of the tumor have broken down, showing foci of detritus with agglomeration of polynuclear leucocytes. In many places, in this way, cyst-like cavities filled with leucocytes are formed. No bacteria were found in them.

In a number of sections larger and smaller groups of medium-sized round cells, with comparatively large nuclei, are found, frequently arranged around blood vessels, which give the appearance of foci of sarcomatous degeneration. The nature of the nuclei, however, as well as the absence of any mitoses, leave it doubtful whether we have to deal here with sarcomatous structures.

The interior of the tumor is poor in its supply of vascular structures, which are a little more plentiful at the periphery.

From these data it is apparent that the tumor is a fibroma with a series of degenerative changes all through its mass.

The form of the tumor recalls to some degree the shape of the ovarium, the indentation in its kidney-shaped outline most likely corresponding to the hilus. It must, therefore, be called a *fibroma ovarii diffusum*.

HERNIA OR DIVERTICULUM OF THE CHORION.¹

BY

L. H. LAIDLEY, M.D.,
St Louis, Mo.

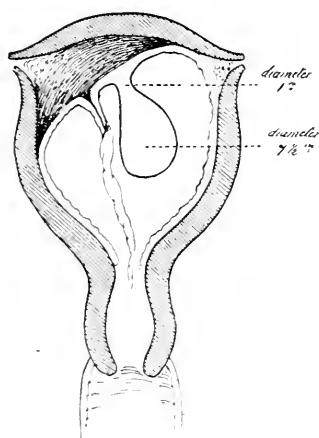
(With illustration.)

CYSTS of the placenta have been reported by Millet and others, supposed to have developed from the exudation of blood, forming a clot separating the chorion, usually of small size, and in some cases more than one is noted. Ercolani reported two cases; in one the entire fetal surface of the placenta was sown with round tumors covered by chorion, the largest being about the size of a cherry. Some have been

¹ Read before the American Association of Obstetricians and Gynecologists, at Louisville, September 18-20, 1900.

opened and the chorional wall torn, showing a solid material filling the depth of the cyst; others were more solid and were filled with coagulated fibrin in which rounded masses of granular hematin could be seen.

Ercolani proved that the interior wall was formed by the chorion, which covered the whole bloody mass, of which half projected above the placental surface, while half dipped into the placental tissue and lay in immediate contact with the effused blood. The term cyst is therefore inexact. At the central depth of these tumors the villositities, more fibrous than usual, formed a compact layer, certain spots in which turned out to be cells of the serotina. Small, irregular, calcareous concretions were scattered through the mass.



Hernia or diverticulum of the chorion.

Bustamente describes a kind of cyst which is sometimes found upon the fetal surface of the placenta, of a regularly rounded or elongated shape, and varying in size from two-fifths of an inch to 2 or $2\frac{2}{3}$ inches. They are placed below the chorion and amnion, which form their superficial fetal boundary, being limited below by the placental tissue itself. The contents of these cysts are solid and liquid.

A. Daugan reported a case of an oval tumor, $4\frac{2}{3}$ inches long by $3\frac{1}{2}$ inches broad, and covered by the membranes, which were partly detached from its surface. Several large venous and arterial branches of the umbilical vessels run over its surface and penetrate its substance to the centre. Divided longitudinally, the tumor appears to be composed of intimately ad-

herent lobes, some being of a dead white and others of a pale or deep rose tint. Its tissue is homogeneous.

The case which I present has the following history: Mrs. L., age 22, was confined at the seventh month (being her second pregnancy) on August 5. She was in labor about six hours; all that time the os was fully dilated without any pain until a few minutes before her delivery, which was normal; twenty minutes afterward a tumor-like body, seven inches in diameter, was expelled, proving to be a sac containing amniotic fluid with coagulated blood. It was attached to the placental covering one inch to the left of the funis, making a pedicle one-half inch in diameter, made up of the chorion, blood vessels, and connective tissue. The placenta was detached forcibly in order to preserve the sac and contents. A microscopic examination of the cyst wall shows it to contain the same anatomical structures as the chorion, fed by the same blood vessels, producing a diverticulum or hernia of the chorion, the fetal side presenting the chorion, the inside the amnion.

The literature does not present a similar instance of this form of tumor. As to the cause of its development, I offer the following theory: Early in the pregnancy there was, because of a relaxed state of the wall of the chorion, a portion of it so twisted as to form a new chamber, receiving its blood from the usual source, its cavity—the normal amniotic fluid, and because of its partial interference of the blood vessels an effusion into the sac.

JAUNDICE FOLLOWING ABDOMINAL SECTION.¹

BY

HENRY D. INGRAHAM, M.D.,
Buffalo, N. Y.

It is not so much the intention of the writer to offer in this brief essay anything which will enlighten the members of the Society, as it is his hope that he may obtain from you an explanation of what has for some time been a mystery to him.

The fact that jaundice follows abdominal section so frequently is, to my mind, proof that the operation in some mys-

¹ Read before the American Association of Obstetricians and Gynecologists, at Louisville, September 18-20, 1900.

terious way causes this condition. I know of no text book on gynecology or abdominal surgery that mentions this sequel, nor do I find it mentioned in the Transactions of this Society or of the American Gynecological Society. To be sure, it may be mentioned, but I am not aware that it is. Two or three years ago it occurred in my practice more frequently than at present. For a time eight per cent or more of my cases of abdominal section were followed, in from two to four months, by quite severe attacks of jaundice. Not only has it occurred in cases that I have operated upon, but I have seen it in patients of other operators, although I am unable to state the percentage in their cases.

Jaundice may follow abdominal section, regardless of the condition for which the operation was done. It has occurred after the removal of one tube or ovary, both tubes or ovaries, an ovarian cyst, complete hysterectomy for fibroids, uterine cancer, and after appendectomy. It has developed after the most severe, complicated, and prolonged operations, or after those of the easiest and simplest character; after a lengthy and tedious convalescence, or after a recovery in which the symptoms were so mild and the disturbance so slight that the patient could hardly realize the necessity of remaining in bed. It has occurred after the use of every kind of suture material, but more frequently, in my practice, after the use of silk for ligating the pedicle. Very often it has appeared when there was suppuration and the formation of a sinus due to the infection of the pedicle ligature. It has not always occurred when a sinus existed, neither have all the cases followed the use of the silk ligature, but it has been at least twice as frequent after the use of silk as it has after using catgut. Neither the difficulty of the operation nor the kind of suture or ligature material used has appeared to affect the severity of the attack nor to influence in any manner the course of the disease.

Allow me to mention three of my cases, they being typical of the others.

CASE I.—Mrs. A., age 36; born in the United States; large, muscular, well-developed woman; married fourteen years; three children, oldest 12 years, youngest 6 years; labors normal. Always in good health until three years ago, when she began to complain of pelvic symptoms, and upon examination she was thought to have pus tubes on both sides. An operation was performed a few days later, and the diagnosis was found to be correct. The adhesions of the distended tubes to the adjacent viscera were quite extensive and firm, but

were fortunately broken without rupturing the tubes. Silk was used to tie the pedicles, and the abdomen was closed with silkworm gut, each suture including the whole thickness of the abdominal wall. Patient's recovery was uneventful, and she left the hospital in three weeks after the operation, feeling well. A short time after leaving a small abscess appeared, and I concluded that the silk around one of the pedicles had become infected. A sinus formed and continued to discharge a little pus for about two months, when one day I saw the end of a thread, and upon removing it found that it was the ligature around one of the pedicles. The sinus soon healed, but about two months later she had an attack of jaundice, with the usual symptoms of this condition well marked. It was nearly six weeks before the yellow discoloration had entirely disappeared. Since then she has been in perfect health, now eight months. She had never before had jaundice nor any other disease of the liver.

CASE II.—Mrs. L., age 44; born in the United States; married twenty-three years; one child 22 years old; no miscarriages. Had suffered from pelvic symptoms several years, and about fourteen months before I had removed both tubes and ovaries. Operation not difficult, recovery normal, and patient felt well for the following six months, when she began to complain of severe pain in the left iliac region, with tenderness over the uterus. She wished her uterus removed, and on August 10, 1899, I did an abdominal hysterectomy. The uterus was somewhat larger than normal, and had not atrophied since the removal of the tubes. On the left side, where she had the pain, there were quite extensive and firm adhesions of the large intestine to the stump of the broad ligament. The adhesions were separated with considerable difficulty, but without injury to the bowel. In this case catgut was used throughout, except one silkworm gut to bring the skin together. Recovery was uneventful, and in three and one-half weeks after the operation the patient left the hospital for her home, which was several miles distant. Her health was good until six months later, when she had a well-marked attack of jaundice, with the usual symptoms, including the mental depression. She recovered entirely in about four weeks, and has been in perfect health since. In this case there was marked tenderness over the liver, but not much, if any, enlargement. She had never had any hepatic trouble before.

CASE III.—Mrs. B., age 32; married at 20; one child, 10

years old; widow eight years. Operation upon October 30, 1899. Uterus curetted, perineum and cervix repaired, and both tubes and ovaries removed. Operation comparatively easy. Chromicized catgut used to close cervix and perineum, silk in the abdominal cavity, and through-and-through silk-worm-gut sutures to close the abdominal walls.

Recovery was rather more protracted than in the other cases, and for two or three days the temperature was nearly 101° F., probably due to a stitch abscess, which healed in a short time. Patient left the hospital four weeks after the operation, remained at home three weeks, and then, contrary to my advice, went back to her former situation, that of cook in a large private family. She continued in good health for three months, when I was called to see her and found well-defined jaundice, with distinct tenderness over the liver and some enlargement of this organ. This was the most severe and pronounced case of the three in every respect, and especially in the mental depression. It was nearly eight weeks before the patient recovered, but since then she has had excellent health and has worked hard all summer.

I might enumerate other cases, but I think the above are sufficient. What causes the condition I cannot positively say; I can only surmise. If jaundice occurred only in my own cases, it might be thought that my asepsis and technique were at fault. I am as careful in these respects as I possibly can be, and this sequel occurs in the practice of other operators perhaps as frequently as it does in mine. I certainly was as careful and took as much pains with the three cases mentioned as with any in which jaundice did not follow the operation. If the condition was due to sepsis, why should it not occur earlier, and why should there not be other symptoms of a septic nature? As no case of postoperative jaundice has terminated fatally, there has been no opportunity to investigate the cause by an autopsy.

In some of the cases in which silk was used, no sinus formed, and there was no indication of the slightest sepsis whatever, while in some of those where a sinus had formed it had been healed for some time before the appearance of the jaundice. Neither did jaundice follow in all cases where there had been a sinus. Perhaps it would be well to state in parenthesis that the silk was sterilized by boiling just before operation, and the catgut by formalin.

Be as careful as we may, there is no doubt that we carry

into the abdominal cavity, in all cases of section, more or less foreign matter that is not absolutely sterile. If we introduce much and the patient's resistance be slight, she dies in a few days; but if there be but little and the resistance greater, then may it not be that the little blood clots, the injured or detached particles of fat or mesentery, or the exudate thrown out around the ligatures or sutures within the abdomen—especially the two latter—in time become infected and break down, and that this débris is carried through the circulation into the liver and causes the jaundice? Sometimes this condition manifests itself in a few days, but it is usually three to four months in developing—surely a long time for the incubation of a septic process.

Yet, if this be the true explanation, there are many cases where we would expect jaundice to occur that it does not, the operation not having been as cleanly or the abdomen made as free from clots and débris as we could wish, owing to the diseased condition of the parts; while in other cases where the operation has been more cleanly, and apparently no foreign matter has been left in the abdominal cavity, jaundice does occur. Perhaps in one case the resistance of the patient is much greater than in the other.

If the theory advanced—that of septic infection—be not correct, pray what is the explanation?

Mr. President and Fellows, I leave the question with you to decide whether or not the view presented be the true explanation.

I believe it is, yet I am willing to accept any other explanation that is more plausible.

405 FRANKLIN STREET.

THE LIGATURE, AND VALUE OF DRY STERILIZED CATGUT.

BY

J. H. CARSTENS, M.D.,

Detroit.

EVER since Ambroise Paré employed the ligature to tie blood vessels the profession has used many different materials for that purpose. Every imaginable substance has been tried and cast

¹ Read before the American Association of Obstetricians and Gynecologists, at Louisville, September 18-20, 1900.

aside, again picked up and then again discarded. For many years surgery was limited to external parts of the body where ligatures could be reached, after healing had taken place, and be removed. Finally the profession found that silk was the best for that purpose, and so for the first half of the nineteenth century virtually only silk was used. During the last quarter of that century, with the advent of abdominal surgery, requiring the ligature to be buried and be beyond reach after the external wound had healed, the trouble began. Silk was a foreign body and would often cause fistulæ, and the profession looked around for other material, and even used various metals, but they were generally found wanting. Then it tried animal ligatures of various kinds. The greatest trouble with these has been to make them absolutely sterile. Every kind of animal tissue, from the tail of the kangaroo to the fascia lata of the deer, has been used and again dropped. By the great work of Marcy the profession has come to use kangaroo tendon, and I myself have done a great deal to introduce it, and six years ago read a paper before this society on the subject. I have had splendid results with it in many cases, but sometimes I found it septic and to last too long in the tissues.

The mode of preparation and keeping it in oil never suited me, so I finally prepared some myself and kept it in alcohol. But I found another thing, and that was that the kangaroo tendon in a great many cases would not be absorbed and would remain dormant in the tissues for weeks and months, and finally soften and liquefy, forming a so-called cold abscess, perfectly sterile, but still causing a great deal of trouble, especially mental. Some of these abscesses would not be sterile. They would become infected months after, through the blood, and then would cause very serious trouble indeed.

I have tried the different kinds of catgut ligature, cumolized, formaldehyded, the chromicized, and have always found something wrong. The great objection that I have to all these ligatures is that they *last too long*.

It seems absurd to hear men talking about using twenty-, thirty-, or forty-day catgut, as though it made any difference whether it lasted ten days, twenty days, or two months. If the parts are not *healed* in a few days or a week, they will not heal in a month, if you simply hold them in apposition with the ligature. When I have taken out pieces of ligatures weeks and months after operation I have become disgusted with various materials.

Yet catgut is the ideal ligature in abdominal surgery. Again

and again I have approached the subject and experimented, but have as often become discouraged. Reverdin, Döderlein, and others recommended dry sterilized catgut, but I knew of no good method of preparing it until I heard some years ago of the dry sterilized catgut as prepared by Boerckmann. The only thing that I did not like was to use oiled paper or paraffin paper for the purpose of oiling the ligature. That is just what I did not want in a ligature. What I wanted was a *plain, pure animal fibre*, as small as possible, or as fine and as light as possible, to hold the parts in apposition for a few days or to control a blood vessel.

After I had sterilized some I was astonished to find how strong the catgut was after being subject to an intense heat. First using heavy, I began to use it lighter and lighter, and finally got down to No. 3 of the finest German catgut. This I used for tying the pedicle and blood vessels, and it is more than strong enough for that purpose. For fine work, that is, intestinal surgery or to sew the peritoneum together, I use only No. 1 or No. 0. For instance, in operation for appendicitis, that is amply sufficient in strength, as agglutination of the peritoneum takes place so rapidly.

I prepare these ligatures myself (although they are now in the market) in the following manner: The catgut is put in ether for a few days or a week till the fat is all removed, and then cut in pieces eighteen inches long. Three of these are wrapped in fine tissue paper. This is then placed in a small envelope, the latter closed and then placed in the Boerckmann sterilizer and subjected to dry heat for three hours. The thermometer is kept in the apparatus so that you can see that the heat is at least 300°. At the expiration of that time the heat is shut off, and the ligatures remain in the apparatus without disturbance for twelve to eighteen hours, which gives any spores that may be present an opportunity to develop. Then the heat is again used, and the ligatures are subjected to another 300°.

The ligatures are now sterile. They are in the envelope and can be carried in a satchel. When ready for use the end of the envelope can be torn off and the ligature with the tissue paper be dropped into alcohol, the tissue paper removed, the ligature can be threaded and used. They are not slippery and greasy, as is catgut prepared with oil. The knot never slips, and can be firmly tied without danger of opening. They soften and liquefy, and are absorbed in a week or ten days if they are not contaminated by the use of septic material.

No contamination can take place while they are in the envelope, unless the envelope becomes moist. I have had a package in my satchel which I carried all over Europe, and whenever anybody wanted to try it I gave them a couple of envelopes. The envelopes were loose, came in contact with all kinds of things, but were kept dry, and when I returned I made bacteriological tests and found that the catgut was still absolutely sterile.

I have repeatedly tested this catgut and have always found it absolutely sterile. I have prepared kangaroo tendon in the same way and found it efficacious, but, as a rule, it lasts too long, and as the fibres are not smooth or of even thickness, nor long, I have for a couple of years entirely discarded the kangaroo tendon and have only used catgut.

Such a thing as a fistula I have not seen during this time, except in cases operated upon by others where silk was used, and especially in cases of appendicitis.

What I want to plead for especially is that in septic cases requiring a ligature no silk should be used, as a fistula nearly always ensues and remains until the silk is removed. If catgut is used it holds the vessels and the tissues in place a sufficient length of time, but it dissolves and washes away with the discharge, and, as there is no foreign substance left, the wound heals.

I consider this the most important point of all. When it comes to closing the abdominal incision, however, in septic cases, then I use the *en masse* figure-of-eight silkworm-gut suture. By septic cases I understand not only pus cases, but also tubercular and malignant growths. In absolutely sterile cases I of course use catgut, and then also use the same material for closing the abdominal incision, using the fine No. 1 catgut to close the peritoneum, the No. 3 to close the fascia and muscle, and again the No. 1 to close the skin. I use a simple over-and-over suture for the latter purpose, and do not have that dread of the staphylococcus albus which I formerly did.

I have covered the wound with a kaolin paste, which absorbs any secretion and still protects the wound from post-operative infection.

Stitch abscesses—yes, I have them occasionally in one or the other corner of the wound, but they do not contaminate the whole incision if taken in time and opened. Herniæ I have not seen so far following this method of closing the incision, although I have operated on several hundred cases. Still,

the time, two years for the longest, has not been sufficient to demonstrate the value. However, I strengthen the suture by one or two strips of rubber adhesive plaster, which takes off the strain during the retching and vomiting following the operation, and supports the parts when the patients get up, which they generally do in ten or twelve days. I remove this plaster before the patient leaves the hospital, and apply a fresh one, which is allowed to remain until it gets loose, that is, three or four weeks, by which time I think the parts are as strong as they ever will be. In fact, Morris has shown that in sixteen to twenty days after union the tissues are about as strong as they were before.

All this is written for experienced surgeons. A beginner had better start with silk. The latter is, as a rule, best in general surgery where asepsis cannot be carried out so well, that is, emergency cases, etc.

The points I want to make about the dry sterilized catgut ligatures are the following :

1. All buried sutures ought to be absorbable.
2. All absorbable ligatures must be absolutely sterile.
3. Chemicalized sutures are no more sterile than plain sutures.
4. A suture that is chemicalized is harder and remains longer in the tissues.
5. This latter is no advantage, but a disadvantage. If, in a special case, it is desirable that a suture should remain longer, dry sterilized kangaroo tendon can be used.

620 WOODWARD AVENUE.

THE TREATMENT OF FIBROIDS IN THE NON-PREGNANT UTERUS.¹

BY

E. F. FISH, M.D.,
Milwaukee, Wis.

KELLY tells us in his work, "Operative Gynecology," that "the great majority of myomatous uteri require no treatment whatever." Penrose says that "the great majority of fibroid tumors of the uterus demand immediate operation," while Tod

¹ Read before the American Association of Obstetricians and Gynecologists, at Louisville, September 18-20, 1900.

Gilliam shows us how a tumor as large as a seventh month of gestation may spontaneously vanish. Perhaps, indeed, it is a serious question whether all fibroids of the non-pregnant uterus should be operated as soon as discovered. Perhaps this will be answered in the negative, but certainly all fibroids productive of symptoms demand attention. When we consider the great losses of blood, the menorrhagias and metrorrhagias, the consequent anemia and cachexia, the heart lesions, the fatty livers and diseased kidneys so common with fibromata, and the liability to a malignant degeneration, are we not forced to consider the advisability of early interference? I therefore venture to assert that whenever uterine fibromata are productive of symptoms—pain, pressure, hemorrhage, constitutional impairment—radical treatment should be instituted, unless there is some grave contraindication, such as chronic nephritis, diabetes, tuberculosis, etc. Having decided upon a radical measure, shall we enucleate the growth or remove the uterus?

MYOMECTOMY.—Theoretically myomectomy is the most preferable way of handling fibroids; in fact, it seems to be the operation of choice under favorable conditions. Although writers and operators differ as to its limits and advisability, my present belief is that it is applicable in all cases when the tumor is pedunculated, and often when subserous, interstitial, or submucous; but where several exist, when sessile or much uterine tissue must be sacrificed, notwithstanding Kelly, who has removed thirty tumors from one uterus, leaving it in good condition, or Polk, who stops only when he no longer can close the tumor cavity and cover the wound with peritoneum, the liability to infection is greater and the operation takes longer in the hands of ordinary operators than hysterectomy. Myomectomy, too, has the disadvantage that other foci may exist, not be discovered, and later take on a rapid development calling for another operation. This is especially true when many tumors are found, for it is held that multiple fibroids mean many foci. The argument that during the child-bearing age myomectomy should be the operation of choice, and after the menopause, hysterectomy, has some force. We must consider, too, that it is still a disputed question whether the disease is purely local, whether it is confined to the uterus, or whether it is general, extending to the adnexa, and this general condition prove to be a source of as much trouble as the uterine fibroid, demanding a second operation and complete eradication of the pelvic organs. It is contraindicated when-

ever there is inflammatory disease within the pelvis. As near as I can ascertain, the mortality in myomectomy is fully equal to hysterectomy, even with the best known operators. There is danger, too, of postoperative hemorrhage. As I am writing this paper one of my patients is lying in St. Joseph's Hospital, very much reduced from hemorrhage occurring one day after a single myomectomy. The tumor was about the size of a small orange. It was embedded in the muscle tissue to the endometrium, and the other half was strictly subserous. It shelled out easily, but I had considerable trouble to control the bleeding, although only one artery spurted. When I had finished I considered that I had done a complete job. One day later she began to bleed from the uterus, and on the second day lost fully three ounces of blood in two hours. She bled also into the abdominal cavity to such an extent that I was obliged to do saline transfusion and use other means to overcome the shock. Forty-eight hours after this her temperature went up to 102.5° and is ranging around 100° now, ten days after the operation. All these things taken together seem to render it highly essential that the surgeon should use great care in the selection of his cases for myomectomy, see to it that in closing the cavity the hemorrhage is absolutely controlled, and that the suture and ligature material is aseptic beyond question.

Having decided to enucleate the growth, shall we proceed through the vagina or open the abdomen? In case the tumor is small I favor the method of turning the uterus into the anterior or posterior vagina and then proceed to shell out the growth or growths. This can be accomplished about as easily as through an abdominal incision. It is possible, too, to examine the tubes and ovaries at this time. It, too, has the usual advantages of vaginal work—less shock, rapid convalescence, no visible scar, no bandaging or wearing of abdominal supporters, no danger of hernia. When the growth is too large to be brought into proper and clear view per vaginam. I favor opening the abdomen. In this way we can ascertain the exact condition of the uterus and whether it is involved to such an extent that myomectomy is impracticable, whether too many nodes exist, and whether to abandon the intention to enucleate and proceed to hysterectomy.

Another thought is worthy of consideration: Shall we shorten the round ligaments or suspend the uterus at this time? It is claimed—and I think experience will convince one of the truth of the claim—that a fibroid uterus is nearly always re-

trodisplaced, and it is held that this arises from a proliferation of the muscularis of the capillaries, and that retrodeviation of the uterus, by reason of the abnormal circulation in and about the organ, is a predisposing cause. In view of this I believe that shortening the round ligaments when operating through the vagina, or ventrofixation after opening the abdomen, will re-establish a proper circulation and remove this etiological factor.

HYSTERECTOMY.—When the tumor involves a great deal of uterine tissue, so much that a proper closing of the tumor cavity is not possible, when the organ is studded with little tumors or nodes, when coexisting pelvic disease is present, when the growth is degenerating, when there are adhesions, when the tubes and ovaries are involved to such an extent that they must be sacrificed, when the disease is no longer local, when the change of life has occurred—then in hysterectomy lies the woman's only hope of relief. Admitting that the organ must go, we are again confronted with the problem whether to do a vaginal, abdominal, or combined operation. If the cervix is normal and healthy, I favor the abdominal route and supra-vaginal amputation of the uterus. I favor this not only for the usual reasons given—that it preserves the vaginal vault, if properly suspended prevents prolapse, that the danger of infection is less than when the vagina is open—but for the additional reason that it maintains the sexual magnetism which belongs to this part of the organ. If the cervix is lacerated or diseased, then the entire organ must be extirpated. The reason for this is obvious: a diseased cervix is always a source of annoyance, leucorrhœa, etc., and is a standing invitation for carcinoma to engraft itself. The operation may be done by the abdominal route or through the vagina. If the tumor is small, not larger than a uterus at the fourth month of gestation, with few or no adhesions, vaginal hysterectomy is easy. If larger than this and adhesions exist, the abdominal operation is easier. It is a matter of little importance whose method of operating is followed. An understanding of all methods is almost indispensable. Whether we follow that of Perry, Jacobs, Martin of Berlin, Bardenheuer, Kelly, Senn, Baldwin, Baer, Le Bec, Richelot, Ségond, Doyen, Pryor, or Allen, is a matter of little importance so far as this paper is concerned. Perhaps those of Pryor, Doyen, and Allen represent the best and easiest ways for supravaginal amputation, panhysterectomy, and the combined operation. In a sense,

every case has peculiarities of its own, and certain modifications are almost necessary to every method. In this connection the question of the conservation of the ovary seems apropos. I favor the leaving of normal ovaries; or if only one is healthy, leave it: or if only part of an ovary can be saved, I do that. When the ovary is studded with little pea-like cysts, these can be opened by ignipuncture or in any other way, and, if otherwise sound, leave it. Personally I am convinced that it modifies many of the nervous symptoms which often violently intervene when the adnexa are completely removed. I admit that if left they soon begin to atrophy or degenerate. Still, the sudden onset of the symptoms accompanying complete removal is mitigated. I have in mind a case operated a year ago, in which one ovary was left, and up to this day she has not had a hot flash, a chill, nor a sweat, nor any of the unpleasant features of the change of life. She consulted me in June last and I found the ovary tender and somewhat enlarged, probably degenerating. Otherwise she was in perfect health. I have had no experience with leaving ovaries after the menopause. There are advocates of this. True, the ovary continues to ovulate for some time after the change of life.

PALLIATIVE MEASURES. *Curettage.*—I look upon curettage as merely a temporary relief. When the patient is very much reduced by reason of continuous hemorrhage, a thorough curetting will arrest the loss of blood and enable the patient to gain strength and vitality, and so become properly prepared physically to undergo a radical cure. The work must be thoroughly done in order to be of any lasting benefit. It is advisable after curettage to apply Churchill's tincture of iodine. This is often followed by relief for weeks and months. It is not only applicable in patients such as I have mentioned (those reduced by hemorrhage), but for such cases as by reason of other existing disease—kidney, liver, heart, lung, etc.—are unable to submit to curative measures, and to those nearing the change of life and who are anxious to rely upon the menopause.

Electricity.—Electricity is not used as much as formerly in the treatment of fibroids. It nevertheless has its place and is powerful for good, as it certainly often symptomatically cures and reduces the size of the growth, even if it does not entirely disappear. In simple, small interstitial tumors accompanied by pain and hemorrhage, it often mitigates and controls the pain, lessens or stops the loss of blood, and reduces the size of

the tumor. The fibrocystic tumors, or those of a gelatinous character, are never benefited by electricity. It is the hard fibroids, the myofibromata, which are susceptible to its action. It should be remembered that it is contraindicated in pyosalpinx, and, where there are adhesions to the growth, that it may be a cause of peritonitis and even death. The treatment of fibroids by the method of Apostoli is tedious and painful, and, with me, it is impossible to induce patients to continue it when I am unable to promise results.

Salpingo-oöphorectomy.—The removal of the adnexa as a cure for uterine fibroids is practically obsolete. I am, however, almost certain I have seen complete disappearance of the tumor after salpingo-oöphorectomy. In nearly all these cases, however, it has little effect. Gangrene has followed it, and all the unpleasant symptoms of the menopause are violently thrust upon the patient. These considerations, together with the fact that myomectomy and hysterectomy can be just as easily and safely done, have put this procedure into disuse.

Ligation of the Uterine Arteries.—Good temporary results can be expected from ligation of the uterine arteries, but it has never been my fortune to cure a case by this method. Improvement, however, does take place and hemorrhages cease for a time. It nevertheless does not take long for collateral circulation to be established. In patients much reduced by loss of blood, and who, owing to their condition, are not willing to chance a radical operation, curettage combined with ligation of the uterine arteries will act as an important prelude to future curative intervention.

Organopathy.—With the use of extracts, thyroid and mammary, I have had little experience. Such as I have had has been negative, and reported results do not increase my faith in this direction.

Medical and Natural Cures.—Medicines administered internally and hypodermatically may perhaps control to a degree the hemorrhage, but no medicine has been put to a test which has had any influence on the tumor itself. Natural cures have taken place after the menopause, and if the patient is nearing this period we should not deny her the right to await this, unless the progress of the disease is rapid and the danger immediate.

My conclusions, therefore, from personal observation, are that myomectomy is the operation of choice:

1. When the tumor is pedunculated.

2. When it is single, whether subserous, interstitial, or submucous, and can be enucleated without loss of uterine tissue, and the tumor cavity can be closed and covered with peritoneum.

3. When the desire for an heir outweighs all other considerations.

That hysterectomy is indicated:

1. When the tumor involves so much of the uterus that a cavity too large to be properly closed and covered with peritoneum would follow its removal.

2. When several tumors exist, especially little nodules.

3. When the adnexa are diseased to such an extent that they must be sacrificed.

4. When the disease ceases to be local.

5. When hemorrhage, pressure, or great pain is a persistent symptom.

6. Whenever malignancy is suspected or the tumor is of rapid growth.

7. After the change of life.

That palliative treatment is indicated:

1. When the patient is very much reduced from loss of blood, as a prelude to radical cure.

2. When the existence of chronic nephritis, diabetes, tuberculosis, or other constitutional disease forbids radical cure.

3. When the patient is past 40 years of age, the tumor small, the main annoyance hemorrhage, and she is desirous of awaiting the effect of the menopause.

211 GRAND AVENUE.

BIBLIOGRAPHY

ALLEN, D. P.: Hysterectomy for Removal of Large Uterine Myomata by the Combined Vaginal and Abdominal Method.

BAKER, W. H.: Myomectomy for Fibroids.

POLK, W. M.: Surgical Treatment of Fibroids.

GOFFE, J. RIDDLE: Myomectomy per Vaginam.

BOLDT, H. J.: Myofibroma Uteri.

TAYLOR, HUGH M.: The Angiotribe in Abdominal Surgery.

SHERWOOD-DUNN, B.: Total Hysterectomy.

CARSTENS, J. H.: Technique of Abdominal Hysterectomy.

INGRAHAM: Facts in Regard to Uterine Fibroids.

VANDER VEER, A.: Treatment of Uterine Fibroids by the General Practitioner.

NOBLE, C. P.: The History of the Earlier Operations for Fibroid Tumors.

MOSELEY, W. E.: The Use of Thyroid Extract for the Treatment of Fibroid Tumors.

SHOBER, J. B.: The Use of Mammary Gland in the Treatment of Fibroid of the Uterus.

PENROSE: Text Book of Diseases of Women.

KELLY: Operative Gynecology.

STINSON, J. COPLIN: Abdominal Hystero-salpingo-oöphorectomy by a New Method for Multiple Fibroids of the Uterus.

SHOEMAKER, G. E.: Vaginal Hysterectomy for Small Bleeding Uterine Fibromata.

KELLY, H. A.: The Evolution of my Technique in the Treatment of Fibroid Uterine Tumors.

DAVENPORT, F. H.: Intra-abdominal Amputation of the Uterus.

SMITH, A. L.: Some Observations of Pryor's Method of Removing the Fibroid Uterus.

CLARKE, A. P.: Degenerative Changes that Occur in Fibromyomatous Growths.

CHASE, W. B.: Remarks on the Rational Treatment of Uterine Fibroids.

DONALD, A.: Intraperitoneal Hysterectomy and Total Hysterectomy by the Combined Method for Fibroid Tumors of the Uterus.

WHITE, HERBERT: Electricity in the Treatment of Uterine Neoplasms.

LE BEC: Total Hysterectomy for Big Fibroids.

MASSEY, G. B.: The Ultimate Results in 86 Cases of Fibromata of the Uterus treated by the Apostoli Method.

GOELET, A. H.: The Surgical Treatment of Fibroid Tumors of the Uterus.

POLK, W. N.: Thyroid Extract in Fibroid Tumors.

QUILLIAN: Suprapubic Operation for Fibroids.

SMITH, A. L.: Rapid Decrease in the Size of a Fibroid Tumor of the Uterus following its Treatment by Electricity.

GILLIAM, D. TOD: The Uterine Fibroid.

BALDY, J. M.: The Surgical Treatment of Fibromyoma.

SOME POINTS REGARDING SURGERY OF THE GALL BLADDER.¹

BY

A. VANDER VEER, M.D.,

Albany, N. Y.

IN all the rapid advance made in abdominal surgery, there is scarcely any one portion that has received such careful and successful attention as hepatic and biliary complications. So thorough has been the work of our own Fellows and other American surgeons that it becomes a difficult task to add much, if anything, to the subject; yet there are some considerations of the question I wish to present. I trust I may be pardoned

¹ Read before the American Association of Obstetricians and Gynecologists, at Louisville, September 18-20, 1900.

if I seem to go over and rehearse knowledge already acquired; for it must be borne in mind that this part of our surgical work has developed during my professional career, and wonderfully so in the past few years. While I have contributed but few papers, yet I have been a close observer and have done a fair amount of operative work in this field of surgery. I have met some disappointments, as I have had one case in which there was a recurrence of the pain, due to a gallstone lodged in the common duct, which escaped my observation at the time, although making a careful examination of the entire tract.

I have had two cases of hour-glass contraction of the gall bladder, with suppuration of the cyst, which gave me some trouble later in finding other gallstones deeper down. Although the patients did not suffer recurrence of pain, etc., yet they had a sinus for a long time afterward.

The thought first suggested is the early diagnosis of these troubles by the general practitioner and ourselves, the careful study of the views now advanced regarding the formation of gallstones, and the subject of diet and medical treatment. It is a comfort to see the great reliance once placed upon jaundice as one of the positive symptoms swept away. No longer do we have to argue upon this point. The family physician has his anatomy much better in hand, and the literature of the subject is in every well-supplied library. It is true that in some districts or neighborhoods there is yet a field for instructive work.

Mrs. F., æt. 42, had suffered at different times for several years with symptoms that had resulted in her case being called gastralgia, acute dyspepsia, acute intestinal indigestion, nervous spasms, renal colic, and many other conditions; and at last, when malignant disease was suggested, in which the patient, from her long sufferings, was inclined to agree, the husband became much alarmed and a change was made all around.

Dr. C., a comparatively young man, shrewd in his observations, in listening to all that had been said at the consultations of previous physicians, remarked: "I believe the case is one of stones in the gall bladder," but was answered immediately: "Doctor, that cannot be, for no gallstones have ever been found in her stools and she has never been jaundiced." The result of it all was consent to an exploratory incision by the doctor and myself, and the removal of over eighteen hundred gallstones of various sizes. This patient

has done fairly well, although she has had occasional attacks since, undoubtedly due to a stone lodged in the common duct.

Whether we believe that the formation of gallstones is largely due to sedentary habits, excessive eating, sex, nerve strain, pathogenic bacteria, or other conditions, I believe that diet, saline and bath treatment, medicines such as phosphate of soda, olive oil, succinate of iron, and other remedial agencies, should not be ignored.

Recent investigations, in which emphasis is laid upon the absence of bile acids causing the cholesterin to precipitate, disclose, I believe, a field for future study and throw light on this intricate subject. No one will deny that great care should be exercised in watching the stools of cases under medical treatment. A single non-faceted stone with the stool is generally the end of that patient's sufferings.

Mr. A. had suffered for over three months with quite severe jaundice and at times marked biliary colic. I was called to see him with a view to operating, but after a few large doses of olive oil he passed a single non-faceted gallstone and has been absolutely well ever since.

On the other hand, when a faceted stone is passed and the patient still suffers, how earnest we should be in advising an early operation!

Another case quite different is that of Mrs. P., æt. 60, who, under a similar line of treatment, passed three faceted gallstones and was advised to have an operation, but felt she could not submit to it. This patient suffered for several months longer, when there was marked cholemia with ecchymotic spots, and she died in a condition of exhaustion. Undoubtedly an operation should have been done for her relief, based upon the fact that all of the gallstones had not passed out from the gall bladder.

We should not hesitate to place before the patient the dangers of perforation and its many complications, even though at the time they may escape death. Adhesions must be explained to the intelligent patient or friends, for how embarrassing they become to us when an operation is finally undertaken!

A few years since, I saw Mrs. W., who had come many miles to my office—a clear case of gallstone, or stones in the common duct. Neither she nor her friends would consent to an operation. A medical line of treatment was tried and she continued to suffer. Two years after—at the end of a severe attack—she took the train for Albany, reaching the house of a

friend at 7 P M. I saw her that evening. She was much exhausted and very willing to have anything done. At midnight she had a terrific pain, passed into a condition of shock, and died the next morning from perforation of the common duct, the contents escaping into the peritoneal cavity.

A prominent physician in a neighboring city, who had consulted me regarding his attacks of gallstone colic, believed he had cured himself by large doses of bicarbonate of soda. He stated that he had passed at different times nearly one hundred medium-sized calculi, but he was positively opposed to an operation. He was seized with another attack only a few days afterward and died within thirty-six hours from perforation. The autopsy showed within the peritoneal cavity and gall bladder over three hundred additional calculi, some quite large.

When the case is evidently one of lodgment in the common duct, even with intermittent jaundice, medical treatment must be continued for but a short time.

Cases of severe obstruction resulting in acute jaundice, and in which cholemia and ecchymotic spots appear somewhat rapidly, will not admit of great delay in surgical intervention. My most unfortunate cases have been of that kind, in which this broken-up condition of the blood presented. They do not tolerate an operation well.

Another danger we should explain fully to our patients is the liability to cancer resulting from this constant irritation.

Mrs. L., æt. 58, mother of six children. I had attended her at the age of 35, and during the following ten years, for several attacks of gallstone colic, the patient being more or less jaundiced each time. At times she seemed to pass the calculi and would improve, but her sufferings continued for a period of nearly twenty years, when she passed out from under my observation.

On March 16, 1898, I was called to see her, when she was suffering greatly from biliary colic, intensely jaundiced, some ecchymotic spots, much emaciation, and anxious for an operation. This I performed at my private hospital on March 19, 1898, and found a number of gallstones in the gall bladder and common duct, with many nodules of cancer on the under surface of the liver. I completed the ordinary operation of cholecystotomy, with the gall bladder attached to the incision, and she did well for thirty-six hours, then a most terrific hemorrhage occurred from which she died March 23.

Who can deny but that if this patient had had relief from

the gallstones in earlier life she might have escaped cancer of the liver?

We must not hesitate to impress upon our patients what we now know to be a fact, that the continuous irritation of gallstones will result in cancer in a certain number of cases. Few intelligent women of the present day, when told that they have a lacerated cervix, fail to realize the possible danger that is ahead of epithelioma. They are parallel conditions. In these long-delayed cases great stress must be laid upon the danger of hematemesis and of hemorrhage from the wound. If an early operation is done, and the case one of primary cancer, we have now the comfort of knowing that if the growth is small it can be successfully removed.

While on this subject of cancer we may occasionally err in believing the case to be one of carcinoma of the liver, when in reality it is not, but presents on exploration a gallstone or gallstones. I shall ever remember an error in diagnosis, made by myself, in the case of Mr. L., æt. 72, who I supposed was suffering from cancer of the pylorus, or possibly of the duodenum, in connection with the opening in the common duct, as he occasionally suffered from attacks of pain and vomiting, was slightly jaundiced, and altogether, with loss of appetite, emaciation, etc., I considered the case one of malignancy. However, he did not develop dilatation of the stomach; he continued to live, and at the end of two years I was forced to believe that I had made an error in my first opinion of his case. Death occurred from gradual exhaustion, and a postmortem revealed a gall bladder filled with large calculi, with many adhesions, but no malignant trouble. Therefore I must say most emphatically that in all cases of suspected gallstone trouble that do not yield to an earnest course of treatment, an exploratory incision becomes absolutely necessary. It is safe and will enable us to make a correct diagnosis. In gall-bladder troubles particularly will we be able to grant our patients relief and recovery.

Mrs. G., æt. 65, who was very ill in bed for three months, having the attention of a number of physicians, finally recovered when her gallstone found its exit per rectum.

I am satisfied, from my own observation, that the number of cases of intestinal obstruction due to biliary calculi finding their way into the intestinal tract, and either by additional concretions or from the peculiar lodgment causing obstruction, is growing less.

A very marked case came under my observation a few years since, in which Mr. B. passed through an illness that at one time was thought to be typhoid fever. He finally recovered and died of advanced age, and I had an opportunity of making an autopsy. Remembering his past illness, I was markedly impressed by finding a fistulous track existing between the gall bladder and the upper portion of the ascending colon. As has been observed by careful operators, these fistulous openings that permit the bile to escape into the large intestine do not seem to seriously interfere with the patient's condition of digestion, constipation, etc.

There is a point in connection with some such cases that I wish to refer to—*i.e.*, where we have the irritation of the gallstones producing inflammation of the gall bladder, resulting in suppuration and an abscess. In these cases not infrequently adhesions of the gall bladder to the under surface of the abdominal wall occur, and we consider ourselves quite fortunate, as we attack them, in finding that we can open directly into the gall bladder, remove the gallstones, and drain. I have had two cases, however, in which I was greatly annoyed in finding gallstones later on that had escaped careful and thorough examination at the time, making a prolonged recovery for the patient, in fact one lasting for a period of nearly three years. The gallstone was so large and so hard that it was impossible to dislodge it by any form of instrument. I broke a very firm and solid pair of forceps in taking hold of it at one sitting, and had some little trouble in removing the fragments of the instrument.

We must recognize hour-glass contractions of the gall bladder as a factor in causing the lodgment and retention of one or more gallstones; therefore, in operating upon abscesses of the gall bladder, we should be very careful about noticing the faceted condition of the gallstone, and, if present, not be content to simply remove one large stone, for there are apt to be others.

In these cases of gall-bladder suppuration one does not always feel like loosening up the adhesions and doing a cholecystectomy, but is content to drain, leaving the patient, as in other of our operations, with a fistulous track which ultimately becomes a mucous sinus, although it may be quite distressing if it continues for a long time. These are the cases in which we are justified later in making a more thorough operation, incising outside the point of adhesions, and doing a cholecyst-

enterostomy, removing at the same time what may be left of the gallstones in the gall bladder, and most or all of the gall bladder, either by means of the Murphy button or otherwise.

In these cases of retained gallstone or stones within a suppurating bladder, with complications, Mayo Robson has spoken very favorably of an injection of a five per cent solution of green soap.

At the present time it is a great comfort to the operating surgeon to know how kindly the patient will, in most cases, submit to a mucous or biliary fistula. They are so much more comfortable than they were before the operation that they seldom complain much, but there are cases in which it becomes necessary to close the mucous fistula. I have succeeded well in such cases where there are no complications in connection with the gall bladder, such as I have referred to. but a simple fistulous track left, by dissecting out this fistulous sinus, making a fairly long tube of it, then, by means of the small Murphy button, connecting it either with the upper portion of the jejunum or the lower portion of the duodenum, a most happy result following.

I have observed with great satisfaction the complacency with which the public, or, to speak more correctly, the patient and friends of the patient, will submit to an operation where the attacks of pain have brought great suffering, and we have had reason to believe that gallstones were present, yet found only a stenosis of the common or cystic duct. When drainage was established the relief afforded seemed to disarm the patient from making any severe criticism in regard to a possible error in diagnosis because the gallstones were not found.

These patients very often make a good recovery without any additional operation, the fistula closing within a few months or a year, or even longer, after the operation has been performed, and when the inflammatory condition, or whatever may have caused the stenosis, has been relieved. I can cite several cases that have healed without any further operative intervention, where we expected to find one or more gallstones but did not.

We should lay great stress, when seeing a patient suffering from biliary colic, upon warning the individual not to allow too many attacks to pass by. The complication of inflammation of the ducts with adhesions, stenosis, etc., should be carefully explained.

Perhaps one of the most difficult features the surgeon ope-

rating upon the gall bladder or gall ducts at the present time has to deal with is the removal of a stone from the common duct, the difficulty of reaching it and the embarrassment of sometimes closing the incision in the duct being great. All of us are familiar with the methods of reaching it directly by incision by passing into the duodenum, then entering the common duct, reaching the stone sometimes in that way; and yet when we come to close the incision in the common duct by suture, Halsted's hammer, or otherwise, we are often greatly embarrassed, much valuable time being lost, particularly when the patient is much emaciated and exhausted and it is not desirable to prolong surgical intervention.

If we will look into our anatomy a little carefully we will find, as is so well described by Mayo Robson, what is called the peritoneal pouch, on the right side of the abdomen, and of which he speaks as follows:

"The large peritoneal pouch . . . bounded above by the right lobe of the liver, below by the ascending layer of the transverse meso-colon covering the duodenum internally, externally by the peritoneum lining the parietes down to the crest of the ilium, posteriorly by the ascending meso-colon covering the kidney, and internally by the peritoneum covering the spine, has long been recognized, but perhaps not sufficiently appreciated, in gall-bladder surgery."

Mr. Rutherford Morrison drew attention to it in a paper in the *British Medical Journal* for March 3, 1894:

"It is possible to drain this pouch satisfactorily by means of a long glass tube, but it is probably safer on the whole to make use of a lumbar drain. The author preferred to place such reliance on the ease and safety with which it can be drained that he does not advocate much time being spent in suturing incisions in the gall bladder or bile ducts. It is interesting to note that it is capable of holding nearly a pint of fluid before it overflows into the general peritoneal cavity through the foramen of Winslow or over the pelvic brim."

An impressive case regarding stones in the hepatic duct came under my observation a few years ago. Dr. S. was ill for several months with evidence of biliary trouble, and the obstruction thought to be due to adhesions following an attack of typhoid fever from which he had suffered several years previously. He died in a most profound condition of cholemia and exhaustion. The autopsy revealed several stones in the

hepatic ducts, which perhaps could have been reached and the incision drained through the peritoneal pouch.

Most of us are familiar with abscesses we have opened through the lumbar region, and in which we have had the positive evidence, in finding gallstones, of the case having been connected with the gall bladder, yet the larger peritoneal cavity has been shut off and the patient escaped general peritonitis.

No doubt many of us can refer to so-called retroperitoneal abscesses, perinephritic abscesses, abscesses resulting from appendicitis, as we believed; but when attacking the same through the lumbar region, as it was desirable to work from behind, we have not only found pus, as we expected, but have also found not one but several large gallstones.

January 21, 1900, I was called to see Mrs. L., æt. 45, mother of several children, who had had many attacks of gallstone colic, but had remained entirely free from them during the past three years. January 19, 1900, she was taken with severe pain pretty well down in the inguinal region, on the right side, requiring several doses of morphine to afford relief. This was followed by vomiting and great tenderness over the abdomen. Her physician, a very intelligent man, was of the impression that she was suffering from appendicitis, and when I saw her on the afternoon of the following day I was fully convinced that he was right in his diagnosis. As the case presented so many severe symptoms, her temperature being 103° , and as she had had one or two marked chills. I felt that an operation was absolutely necessary. I advised her being taken to the Albany Hospital, which was done the next morning. On second examination the tenderness seemed to be more particularly in the right lumbar region, and there a phlegmon could be located. I felt quite sure that the case was one of appendicitis in which we had to deal with an appendix extraperitoneal, outside and behind the cecum; therefore I planned my incision as if I were endeavoring to reach the kidney. By careful dissection, and with the use of the needle of the aspirator, I very readily reached a pocket of pus. This I opened up freely, and could pass my finger upward toward the gall bladder and downward toward the appendix; but being unable to find any necrosed portion of the latter, I concluded it would be better to wash out and introduce a drainage tube. The patient was relieved at once, had a good night, her temperature and pulse became

normal, and, with the aid of rectal enemata, several good movements of the bowels were procured. Two days afterward, in making my rounds with the house surgeon, I noticed, as the nurse removed the dressings, a marked appearance of bile, and I said to the doctor, "What do you think that looks like?" He very quietly replied "that it had something of the appearance of a discharge from the gall bladder." The patient did nicely for two weeks, when, in washing out the cavity, a couple of gallstones were floated to the surface and saved. After this the wound healed without any delay.

Undoubtedly these gallstones had found their way out of the gall bladder in her attack of three years previous, and must have become lodged in the peritoneal pouch, shut off from the abdominal peritoneal cavity; then, either from irritation of the appendix or other cause, suppuration occurred, the abscess which we opened not being strictly in connection with the appendicitis believed to be present.

I call to mind another case in which a famous surgeon in our State had made the diagnosis of perinephritic abscess, and in doing the operation for its relief was quite astonished, as were the family physician and those present, when he opened into the abscess cavity through the lumbar region, to have a number of gallstones roll out with the pus, indicating that the trouble had been associated with the gall bladder instead of the connective tissue of the kidney. This patient made a good recovery by simple drainage.

Now, if we will take a little more advantage of this anatomical relation of the parts, we can very often shorten an operation in which we have found it quite difficult to close the incision in the common duct; for we will find a very easy method of drainage by means of the lumbar stab.

The peritoneal cavity is shut off quickly, and we all know that the tendency is for these wounds in the bile ducts to heal kindly. The record of the few operations done is decidedly in favor of this method of drainage.

This is a point to which I wish to call your attention. It is also particularly true in stenosis of the common duct, malignant or otherwise, and where there is a small, contracted gall bladder, so exceedingly embarrassing to handle. We cannot bring it up into the incision, we cannot do a cholecystotomy or cholecystenterostomy, but drainage seems to be absolutely necessary and can be done by this method.

How to close a persistent mucous or biliary fistula following

a cholecystotomy is a question that will rest largely with each individual operator. I am quite confident that we succeed better if in doing the first operation we unite the peritoneal surfaces of the gall bladder with the peritoneum and deep fascia of the incision, instead of bringing it up and uniting it with the skin; that afterward, when all obstruction has been relieved, these wounds, then freshened, will close quickly and permanently; whereas if you have brought the gall bladder up and attached it to the entire incision and the skin, the sinus becomes more rugged, thickened, and cartilaginous, and the tissue will not unite with sufficient firmness to bear up with any resistance from within.

A few more points. I believe the exclusion of starchy foods and sweets to be of importance in these cases. We do sometimes see beneficial results in severe cases of gallstone trouble where an energetic course of treatment has been followed out at Carlsbad or some similar watering place.

A point in regard to massage. This always seems to me an exceedingly dangerous line of treatment, particularly in connection with a full gall bladder or a gallstone lodged in the common duct. The same censure holds good in regard to aspiration of the gall bladder—something that should seldom, if ever, be countenanced. It is true that healthy bile in the peritoneal cavity is not particularly dangerous, but when you get a distended gall bladder you are pretty apt to have in it septic micro-organisms of some kind.

Regarding the use of the X-rays in the diagnosis of gallstones, it has brought me but little aid. I am frank to say that I have seen scarcely any good result from its use.

Finally:

1. An early diagnosis of cases.
2. In suppuration of the gall bladder with adhesions, a most thorough examination should be made from within, by digital exploration and use of probe, for any possible deep-seated calculi.
3. In prolonged operations upon the common duct or hepatic ducts, where adhesions are present and it is difficult to close the incision after removal of the calculus, drainage through the peritoneal pouch by means of the lumbar stab is advisable.
4. When the patient is suffering seriously from cholemia, with marked ecchymotic spots over the body, intense itching, the blood examined and found in a septic condition, an opera-

tion is not to be encouraged. It is too late, in the vast majority of cases, for the patient to recover.

5. General practitioners, as well as the surgeon, should place more earnestly before the patient and friends the dangers of repeated attacks of gallstone irritation resulting in cancer of the ducts, stomach, or liver.

28 EAGLE STREET.

SOME CONTRAINDICATIONS TO INTRAPERITONEAL USE OF NORMAL SALT SOLUTION AFTER ABDOMINAL SECTION.¹

BY

FRANK F. SIMPSON, M.D.,
Pittsburg, Pa.

(With four illustrations.)

THE merits of normal salt solution have received such widespread and mature consideration that this subject hardly permits of further discussion. The especial advantages of the various ways of using it have also been made so clear and concise that but little remains to be said. The intraperitoneal use following abdominal section, though empirical in its inception, has been put upon a scientific basis by careful experiments. The growing favor of this method, elaborated by Dr. John G. Clark and those with whom he has been intimately associated, is an eloquent tribute to its value, and to the men who have shown how simple, easy, and efficacious it is.

Yet it is not capable of universal application, for under some conditions it is unnecessary, under others it is positively harmful. The contraindications should therefore be clearly defined, in order that it may not fall into disfavor because of an improper application of the principles involved. The advocates of this method tell us that the chief advantages of normal salt solution *thus applied* are that culture media and bacteria are more rapidly absorbed; that they are thus gotten rid of before growing numbers and increasing quantity suffice to endanger life; and that drainage of this kind is not fraught with the dangers of external contamination. Were these conditions always possible, this would constitute the ideal method of

¹ Read before the American Association of Obstetricians and Gynecologists, at Louisville, September 18-20, 1900.

drainage. While it is applicable to the vast majority of cases, there are two conspicuous and important exceptions. They have been alluded to by Dr. Clark, but I think they need to be emphasized.

The first class embraces those cases (such as ovarian and uterine neoplasms) in which ascites is present at the time of operation, and is in itself direct evidence that absorption of fluids from the peritoneal cavity must at best be slow, if indeed it occurs at all. If not absorbed, fluids put into the abdominal cavity lose their value and become foreign substances. Hence they are objectionable. Two cases of this kind have come under my observation. One became infected and was for a time in a critical condition; the other was not inconvenienced, though she left the hospital with considerable fluid in the abdominal cavity.

The next class embraces the most important cases in the whole domain of medicine and surgery—important because of their great frequency, because of the wide range of age from which victims are claimed, because of the frightful mortality that quickly supervenes, and because of the exquisite suffering from which death mercifully releases these patients.

The cases referred to are those in which enormous doses of bacterial poisons are suddenly poured into the peritoneal cavity by rupture of abscesses (pelvic, appendical, hepatic, etc.), or of the hollow viscera, caused by accident or disease.

I think it is generally conceded that death from peritonitis is caused, not by the local lesion, but by the bacteria and bacterial poisons that gain entrance to the circulation and thence reach the vital centres. In the cases alluded to, the pinched features, the cold, purple extremities, and the small, rapid, feeble pulse show too plainly that the poison in the individual case is most virulent. Desperate chances are taken when we wait that long, if the diagnosis is certain. When the abdomen is opened and ounces of this fluid are found to be present, it seems most irrational that anything should be done to favor its continued absorption. Yet this is the action for which peritoneal infusions of normal salt solution are chiefly lauded. In these cases it is as positively contraindicated as the administration of fats and oils in phosphorus poisoning.

It is hardly fair to refer to the defects of a procedure without presenting an alternative which seems to have greater merit. I have thus assailed an established method of treatment, because, like those of you to whom I have the honor of

speaking, I have felt keenly the impotence we must all confess when confronted by this most fatal of afflictions. In the remarks which follow you will doubtless find much that is elementary. But we can well afford to revert to first principles when considering a disease which is almost always fatal if the patient is not relieved by operation; a disease for the relief of which the operative procedures in vogue, until quite recently, could offer but little more hope. The condition referred to is not that of visceral adhesions without pus or bacteria; is not that of pus confined in natural cavities; is not that of abscesses walled off by lymph and adhesions; but the condition which is found soon after one of the hollow viscera or an abscess has ruptured and its contents have been poured into the free abdominal cavity. The essential constituents of the material from the ruptured cavity are effete substances in various stages of decomposition, bacteria, and bacterial poisons. Nature quickly adds considerable fluid poured out from serous surfaces. We thus find an indefinite quantity of a deadly poison free in a cavity whose walls absorb such fluids with avidity. But, what is worse, conditions exist for the rapid and continuous production of more poison. The principles underlying the treatment of this condition are the same as those for strychnine or other poisoning where absorption from the stomach is progressive: administer physiologic antidotes, retard absorption, speedily remove the remaining poison by the simplest and safest method, guard against further administration on the one hand and production on the other, provide for its immediate removal when it reaches an absorbing surface. The difficulty comes in the application of these principles to surgical cases. I believe it possible. I believe that the day is not far distant when success can be predicted with the confidence we feel when referring to a simple hysterectomy for fibroid. Brief allusion to some observations and experiments of others and to some observations and experiments of my own will make my views more clear.

Dr. John G. Clark has called attention to the facts determined by Muscatello and others:

1. That absorption of substances by the peritoneum is most rapid, and chiefly through the diaphragm.
2. That pigment put into the pelvis of dogs reaches the mediastinal glands within a few minutes, if the dog be suspended with its head downward.

3. Conversely, that absorption is very much less rapid if the dog is in the reverse position, some hours being required.

In other words, the pelvic peritoneum absorbs and distributes slowly.

Dr. Clark's method of internal drainage has done much, in his hands and in the hands of other competent men, to verify the accuracy of the foregoing conclusions.

If absorption can be hastened by Clark's position, it can be retarded by the reverse position if the lesion is below the umbilicus. The reasons are twofold. Not only does the pelvic peritoneum absorb slowly, but the area of the absorbing surface is materially reduced by elevation of the trunk and depression of the pelvis. A moment's reflection will recall the fact that there is a shallow depression, the subrenal fossa, on both sides of the spinal column. When the human body is in dorsal decubitus, a small amount of fluid can come in contact with an extensive area of peritoneum. Elevate the head and trunk, and this fluid drains into the more globular pelvis. The parietal and visceral contact surfaces are both diminished. Dr. Fowler's recent report of nine consecutive recoveries of serious cases treated by this posture tends to show that there is an element of truth in this theory. A case of our own, treated by that posture one month before Dr. Fowler's first case, and for the same reasons, is in accord with this theory, to say the least. This case is mentioned here, not to detract from the value of Dr. Fowler's work, but to give it support by adding one more successful result.

Some months ago it occurred to me that the favorable termination in our case might in part have been due to the supposition that the bacterial poisons were not readily absorbed because of the presence of ascites, and the underlying fact that fluid was passing from the tissues into the peritoneal cavity, not from that cavity into the lymph and blood channels; further, that the presence of fluid usually found in cases of peritonitis may be the result of a conservative effort on the part of Nature, designed to retard absorption. The questions naturally presented themselves: Is it possible to produce an artificial ascites? If so, will that retard the absorption of bacterial poisons? Is it possible to so adjust treatment that, practically, neither absorption nor effusion will occur? Further, is it possible to neutralize these bacterial poisons chemically, so that, if absorbed, they will be inert? I do not refer

to germicides, but to bland chemical antidotes. With the kind and valuable assistance of Mr. Cunningham, of the Pittsburg City Laboratory, an effort was made to solve some of these problems. Forty-five guinea-pigs were experimented upon. In this work glycerin was used because of its well-known hygroscopic action. Diphtheritic toxin was used as a type of bacterial poisons. It was selected because of the accuracy with which fatal doses are habitually determined in that laboratory. In each group of experiments in which it was used, the fact that a lethal dose was employed was determined by control tests.

It was clearly demonstrated that a small amount of glycerin

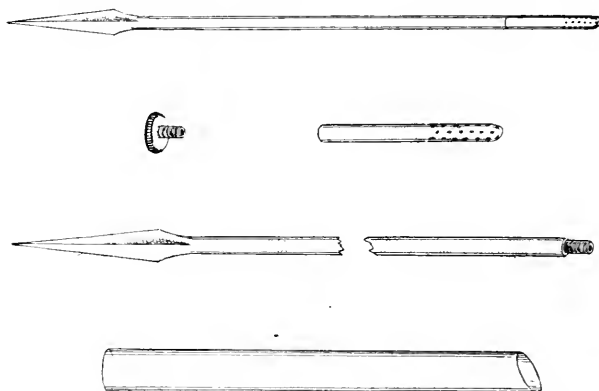


FIG. 1.1

was capable of causing a free flow of fluid into that cavity (3 cubic millimetres caused as much as 25 cubic centimetres to be poured out).

More than half the pigs were given glycerin only, in order to determine whether or not effusion always followed its use. It did.

Large injections, equivalent to two-thirds of a litre of pure glycerin in a man of one hundred and fifty pounds, were followed by the death of several pigs within periods varying from one to two hours. At autopsy an enormous amount of fluid was found in the abdominal cavities. Corresponding amounts in a man of one hundred and fifty pounds would vary from 2 to 10 litres. The rapid withdrawal of this large quan-

¹ Very satisfactory instruments of this kind are made by the Kny-Scheerer Co. of New York.

tity of fluid from the body is quite sufficient to cause death quickly.

When much glycerin and a fatal dose of toxin were injected and allowed to remain, death was hastened.

When glycerin and a fatal dose of toxin were injected, and the pigs were tapped about three hours later, death was retarded in the pigs from which only about one-fourth the effusion was withdrawn, while two, from which perhaps two-thirds of the fluid was drawn off, recovered permanently. I am convinced that their lives were saved by this method of treatment.

No effort has been made to answer the last two questions, nor has the peritoneum been examined microscopically to de-

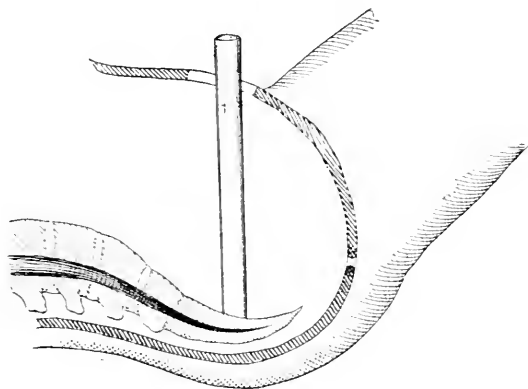


FIG 2 shows protecting tube passed through abdominal incision and placed in accurate contact with pelvic wall at lowest part of pelvic cavity. Its object is to give a safe passageway for a sharp instrument, which can be quickly thrust through it.

termine whether it was injured by the glycerin. No gross lesions were found.

Our experiments have not been in sufficient numbers, nor is our interpretation of results of sufficient accuracy, to warrant final conclusions for a working plan. They do suffice, however, to convince me, at least, that the theory upon which they were based contains a germ of truth. Whether or not it can be practically applied remains to be seen. This matter is presented in the rough, because I am aware that one man seldom perfects any method of treatment, and because I hope that others may be induced to investigate this theory and to adapt to the needs of these pitiable cases.

The speedy and efficient removal of fluids from the peritoneal cavity is all the more a requisite of success if this method be employed. If, because of a very large amount of septic matter, the abdomen must be flushed, it can best be done by using dependent drainage. Very simple experiments on the cadaver will show that the objectionable features of flushing have not all been eliminated. I have repeatedly poured several ounces of fecal matter into the abdominal cavity at autopsy and attempted to wash it out through a five-inch median abdominal incision. The cavity was not cleansed in this way, though quarts of water were used. Flakes were widely distributed. You have all seen this. By making free, dependent drainage,

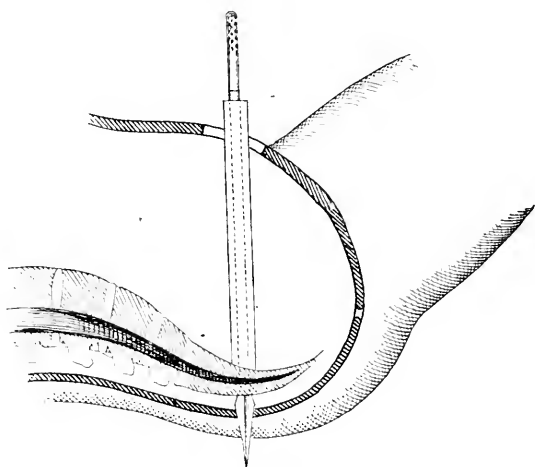


FIG. 3 shows protecting tube in position, and perforator penetrating dependent portion of pelvic wall.

however, and repeating this process, including the introduction of the same quantity of fecal matter as before, the cavity was made far cleaner. By using little at a time the first water contained the fecal matter. The balance came clear. It may be objected that this condition does not exist in actual practice. I grant that it does not after days of peritonitis. But where operation has been done early, and those are the cases alluded to, the conditions are identical. I believe that divergent views regarding drainage are dependent rather upon the question of expediency than differences as to principle. Dependent drainage, properly applied, should carry off fluids more quickly

than any other method, for the law of gravity applies with as great force here as elsewhere in surgery, as elsewhere in nature. The question of expediency is of paramount importance when the patient's desperate condition demands speedy action. Our criterion should be efficiency. Present methods of treating this condition are sadly deficient in this respect. Others should be tried. If dependent drainage be superior in any class of cases, it must surely be so here, for life, not comfort, depends upon efficiency. Thus far it has been effected with difficulty, delay, and danger of seriously injuring abdominal viscera. I believe these difficulties can be easily overcome by passing a plain metallic tube through the abdominal incision

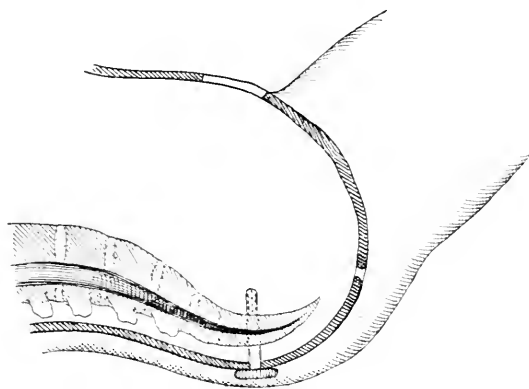


FIG. 4 shows drainage tube (which was attached to blunt end of perforator), left in position after removal of protecting tube and perforator.

down to the most dependent part of the pelvic floor where it is held in accurate contact with the pelvic wall. A sharp, spear-shaped piece of metal, carrying a detachable drainage canal at its blunt end, can be quickly thrust through this tube and the pelvic wall without fear of serious damage. It may be said that this is all right in theory, but that in practice it cannot be effected. That seems to me to be a confession of weakness. The distinguishing feature of superior men is their ability to overcome unusual difficulties. The silent appeal of the thousands who have gone down to untimely graves because present methods did not suffice to relieve them urges you to greater achievements. I have sufficient confidence in the future of our profession to believe that, by concerted and determined effort, new and effective measures will be devised.

Truly marvellous results will then be a possibility of the near future.

It seems to me that nowhere else in surgery is the element of time so large a factor in determining results. Indecision as to the method to adopt often causes delay. We should map out our course definitely before operation and execute it as speedily as effective work will permit.

A word as to anesthetics. Few, if any, surgeons would countenance the administration of chloroform or ether if the patient had taken an indefinite quantity of aconite and gave marked evidence of its absorption. Why should they be employed in these cases, where we know a large amount of a poison quite as depressing and deadly has been absorbed?

524 PENN AVENUE.

PELVIC SUPPURATIONS.¹

BY

JOSEPH PRICE, M.D.,
Philadelphia, Pa.

ABOUT the best excuse I can give for this paper is that more interest has been manifested at our society meetings in the discussion of papers on pelvic suppurations than in any other class of papers presented.

In the early history of this work a number of classical discussions by workers now present on the pathology, natural history, operative methods, ancient and modern, were presented at county, state, and national meetings. Some of us discussed the subject all over the land, never refusing an opportunity when it offered. We travelled, in twos and in fours, great distances to discuss pelvic pathology before intelligent societies. We were greatly pleased at the results of our early efforts to unlearn about all we had been taught, and to aid others as promptly as possible to unlearn all they had been taught and what they were teaching. Again, we were greatly pleased both with our missionary work and with our surgical interference for the relief of suffering and dying women. Our early efforts were simple, direct, complete, and

¹ Read before the American Association of Obstetricians and Gynecologists, at Louisville, September 18-20, 1900.

positive, and remained so with many of the operators now present. A few operators throughout the country are practising some of the incomplete procedures. The ancient evacuation method is now very commonly practised. The procedure has nothing to recommend it. The relief afforded is slight and always incomplete. All the evacuation methods are blind procedures. We are quite familiar with the multiple nature of pelvic disease, with the great variety of small growths or accumulations, hard, cystic, or suppurative, we find in the pelvic basin. We also know from long practice how easy and satisfactory the removals are when uncomplicated, and how pleasing the results are when complicated by extensive pathological adhesions and disorganizations of involved adjacent viscera. The puncture or evacuation simply consists in the discharge of the fluid contents of something that should be removed. The evacuation complicates removal by an unusual anchorage or fixation; it favors sepsis, shock, and hemorrhage in the repeated operation for removal—conditions rarely experienced in primary operations. I have no doubt all of you have seen patients in your offices and in hospitals who have had the evacuation operation twice or thrice repeated and now demand a cure.

In the last five years I have seen a large number of patients after the second or third puncture. I have also removed the specimens in a good number of cases. The tinkering and delay have commonly resulted disastrously to their general condition. Large numbers are hanging around Philadelphia now. When they consult me, I invariably tell them to go back to their surgeon and ask him to remove the diseased tissues, knowing full well that he is surgically timid and won't remove them.

Abdominal vs. Vaginal Route in Puriform Disease.—
I. Vienna. Schauta, Wertheim and Chrobak have abandoned vaginal puncture, but are doing radical vaginal extirpation of *adnexa and uterus*. For the last three years Vienna mortality in *radical abdominal* work has been 10.5 per cent. For that reason, with improved technique, they have adopted the radical extirpation of *adnexa and uterus per vaginam*, and in the last 230 operations have had a mortality of 1.8 per cent. Schauta thinks, in view of this *low mortality*, conservative treatment should be abandoned.

RESULTS OF OPERATIONS FOR PURIFORM ADNEXA DISEASE OUT OF A
TOTAL OF 2,263 CELIOTOMIES UP TO 1899 IN VIENNA.

KIND OF OPERATION.	No.	Cured.	Died.			
			No.	Per cent.	As direct result of operation.	Per cent.
<i>Abdominal.</i>						
Unilateral adnexa removal..	20	19	1	5.	1	5.
Bilateral adnexa removal.	286	266	20	6.9	17	5.9
Bilateral <i>radical</i> adnexa and uterus extirpation.....	38	34	4	10.5	4	10.5
Sum of abdominal adnexa operations.. . . .	344	319	25	7.2	22	6.0
<i>Vaginal.</i>						
Unilateral adnexa removal	21	18	3	14.2	3	14.2
Unilateral radical adnexa and uterus	7	7	0	0	0	0
Bilateral adnexa removal..	1	1	0	0	0	0
Bilateral <i>radical</i> adnexa and uterus.....	220	214	6	2.7	4	1.8
Sum of vaginal adnexa operations.....	249	240	9	3.6	7	2.8
<i>Sum total</i> of adnexa operations.....	593	559	34	5.7	29	4.8

Mortality, abdominal adnexa 5.9 per cent.

“ “ radical 10.5 “

“ vaginal radical 1.8 “

II. *Berlin.* Olshausen, Winter, and Rumpf have declared against the *conservative* treatment and confine themselves largely to the *abdominal route*. Dührssen reports 200 conservative vaginal operations with 8 deaths. Martin reports 436 with 4 deaths, but in these 436 were included many hydrosalpinxes, cystic degenerations, etc., simple adhesions. Dührssen, Martin, Landau are apostles of conservative vaginal work in Berlin. They call the operation *kolpotomia* (cervix and bladder are separated as for fixation operations; uterine artery ligated on one side of abscess; blunt dissection made into the broad ligament). In *Archiv. für Gynäkologie* Dührssen reports 78 cases of pyosalpinx and pyovarium treated by this method; twice *laparotomy* was necessary; one death. Dührssen claims that where *virulent pus germs* are known to be present, conservatism is in place. If pus is sterile, a radical operation is

preferable. Martin limits kolpotomia to a few cases, doing a radical enucleation, either abdominal or vaginal, in *most* instances. In doing kolpotomia Martin has *twice* injured ureters and once cut a large abdominal blood vessel. Veit, Landau, Stratz, Siefert, Gottschalk follow Dührssen, doing puncture in virulent cases.

The clean removal of the pathological growths or accumulations which we commonly find in the pelvis is easy through the vagina. But that complete repair of a disorganized, involved appendix, of bladder, ureters, small and large bowel, that is an important feature of intrapelvic or abdominal operations, requires a refinement of surgical detail never practised by the vaginal route. The conditions alluded to are never recognized by the vaginal or blind procedure. The most satisfactory explanation I can give for general surgeons who neglect their important work is their hunger and thirst after the pelvic operation. I rejoice that they very commonly adopt the wise procedure—removal from above. But few practise puncture and drainage. They know from experience that puncture of a suppurating colony of glands, either in the neck or groin, is unsurgical and bad practice. They also know that surgery for the completion of such imperfect procedures is complicated and tedious. Primarily, the removal of the suppurating glands at any point is an easy procedure, followed by speedy cure. Puncture and repuncture, evacuation and re-evacuation, are methods of operation which have nothing to recommend them in preference to abdominal section. I cannot, therefore, conceive of any practice or procedure more unfortunate, more unjustifiable than that of timid puncture. With the early history of ovariectomy to guide us, the delay and prolonged tapping, we should not favor or permit similar practices which result in the same or more hopeless conditions. Early in the history of pelvic surgery pelvic suppurations were removed early by students and followers of Mr. Tait with more perfect results than are commonly obtained in other departments of surgery.

Sir Spencer Wells, in his lectures at the College of Surgeons, London, England, says: "So long as the patient is moderately comfortable, so long as she can walk a mile or for half an hour without much inconvenience, so long as she can get up and down stairs, so long as there is no great pressure upon any of the organs of the abdomen or pelvis, and she can breathe pretty well, and her heart is not interfered with, such a patient as

that may be left to ordinary palliative treatment, with the usual attention to the general health."

On this subject Peaslee enters into a lengthy argument, in which he contends for delay, tapping, etc., giving a variety of reasons too long for quotation, and giving the risk of peritonitis the first place. He admits, however, as the strongest argument against delay, "the assumption that adhesions will be developed if they do not already exist, and those existing will become more extensive and firmer, and thus the danger will be enhanced. As a general rule, therefore, I conclude that when the general health has been impaired, and not until then, the time for ovariectomy has arrived."

The above-quoted unfavorable conditions developing in the natural history of cystoma are thrice more common and desperate in all the forms of suppurative pelvic disease. Many now practising the evacuation methods, early in the history of pelvic surgery offered strenuous opposition both to the surgery and the pathology of Mr. Tait. Some few have unreservedly accepted his pathology but not his surgery. At present we have no contraindications for the removal of intrapelvic or intraperitoneal growths. We have but one motive—the relief of suffering and saving lives.

Immediate section is the rule of practice in the case of acute suppurating and ruptured cysts. Tapping and drainage are not thought of. Time will not permit me to discuss this subject under the numerous headings given in the text books. The chapters on pelvic inflammations in some of our recent text books are brief and carefully written. The general practitioner has no excuse for ignorance of this subject.

Formerly we heard much about pelvic cellulitis; now but little is taught or written on this subject. Broad-ligament cellulitis is rarely discussed; it is lymphangitis. Tubal and ovarian suppurations, pyosalpinx, ovarian abscess, gross lesions, not microscopic lesions, are the present foundations for our operations. The more acute forms of gonorrhea, salpingitis, relapsing septic salpingitis are the easy, simple forms of pelvic disease that we are every day successfully dealing with. The more virulent forms require reconsideration.

There is a want of consensus of opinion. All forms of acute suppurative peritonitis demand early and energetic measures. The evacuation methods are not complete. The cul-de-sac opening is not sufficient; it is a healthy wound into infected lymph spaces. He who is familiar with the extent of pelvic

and general peritoneal suppurations is not satisfied with a cul-de-sac toilet evacuation. Some recent authors lay down the rule "that in most cases it will suffice to open the posterior cul-de-sac, let out the pus, and fill the pelvis with iodoform gauze." They overlook the general filth commonly extending to the loins and filling the anterior cul-de-sac. We very commonly find just as much filth in front of the uterus as behind it. Again, the cul-de-sac operations favor the unfavorable heart and lung symptoms so commonly noticed as following such operations for purulent peritonitis.

By the suprapubic method all muddy fluid, effused lymph, puddles of filth are easily reached and cleansed; all tender lymph planes about the pelvic viscera, before and after the uterus, are easily freed from above and inspected before and after either wet or dry toilets. Generous drains can be placed fore and aft the uterus and in the loins. Freeing of ovaries and tubes, emptying the pelvis of adherent bowel, freeing the small bowel of all adhesions, wiping all lymph from bowel, removing all lymph from epiploic appendices, drying and draining all infected spaces, are easy from above and impossible from below.

The cul-de-sac operation robs the surgeon of the interest he should have in this very important work. The suprapubic route favors an interest in the most interesting work I have any knowledge of in surgery.

The author of a very good book says: "The ovaries are palpated and loosened from adhesions. The operator makes his investigation of the broadest kind; no false attachment between the organs should be overlooked. Every lymph space should be entered and broken up." His counsel is the best; his method the worst. If he will adopt the suprapubic method he will be greatly pleased with his results. If we arrest infection we save; if we fail to arrest infection we lose. We save by toilet and copious drainage.

Quoting again from the same author: "The operator seeks to open the lymph streams and tubes, so as to cause them to leak. This he would not dare to do had he not provided through his gauze a means of escape for the discharges." Gauze drains are precipitous drains, the only method we have at present of speedily arresting infections. Ten years before hearing of Mikulicz I practised the open treatment both above and below the pubic arch with splendid results. Formad, the coroner's physician of Philadelphia, was ordered by the coro-

ner to go to a certain house and make a postmortem on a woman who had had a criminal abortion. He found her still living and referred the patient to me. I found the abdomen greatly distended, patient was vomiting and leaking, and there were all the symptoms of approaching dissolution. I opened the abdomen without scrubbing preparations, and found the abdomen charged with quantities of muddy fluid and lymph, all intrapelvic and abdominal viscera adherent and bridged by lymph. I freed everything, all bowel adhesions, that I might see and cleanse the mesentery on both sides, placed gauze drains in both loins, in both iliac fossæ, fore and aft the uterus. She recovered beautifully, and had but one alarming complication—a cough due to metastatic lung involvement. Giving her a pillow, turning her on her side, provoked an alarming cough, which subsided in a few days. This operation I have repeated many times by the suprapubic route for all forms of infection I have any knowledge of.

While writing this paper, three days before this meeting, I did an open operation, used all-gauze drains, for a suppurative peritonitis following a criminal abortion. The pelvis and lower portion of the abdomen were full of pus and filth. The operation was done late, some ten days after the abortion. The perforation of the uterus was large. My impression was that it was done with a lima-bean pole. I could easily pass two fingers in the opening. Strongly adherent loops of bowel in and about the opening only partly prevented the escape of the enormous quantity of pus and fluid above through the uterus and vagina.

PRIVATE HOSPITALS AND THEIR MANAGEMENT.¹

BY

JOSEPH PRICE, M.D.,
Philadelphia, Pa.

THE private hospital has never been discussed in our Association, hence I take pleasure in presenting the subject at this time. The few specialists interested and owning such institutions commonly refer to them in papers and discussions, or

¹ Read before the American Association of Obstetricians and Gynecologists, at Louisville, September 18-20, 1900.

in reporting cases, in simple references, as "my private hospital" or "my sanitarium." In America they are not common; in Europe and on the Continent but few exist.

The early history of such institutions would be interesting if it had been carefully recorded. They had their origin in Southern cities and States, were opened by a few advanced thinkers and workers that they might control patients and perfect operations hitherto always unsuccessful.

It requires many years, and even centuries, for general city or school hospitals to accumulate sufficient endowment for their thrifty support. Throughout this country they are largely dependent upon political or State support, and when so supported they are commonly very corrupt and dirty. It is exceptional that you find a hospital run by a State legislature, supported by political bosses, either clean or doing good work. Again, they are commonly degrading our profession and specialties. They have out professional agents seeking material on a commission. The well-organized private hospital is at the present time doing the best work, giving the most advanced teaching, offering apprenticeships to a few young men with a discipline and prolonged training not offered or given by the school or the political hospital.

The political hospital is not the only corrupt institution in our midst. A few of our well-endowed general hospitals, managed and handed down in families to the third, fourth, and even the fifth generation, are most dangerous institutions to our profession. It is always a misfortune to an endowed charity or public hospital for a family to be in full possession of its funds or endowment. It commonly results in impairing or destroying its usefulness. It is curious, their motives seem so foreign to those of an individual interested in a strictly private institution. No one has ever, to my personal knowledge, made money and accumulated wealth out of a private sanitarium. He may out of the fees, but never out of the board, care, and nursing of patients. It is my impression that the board of patients rarely pays five per cent on the money invested. A good number of these institutions have been financial failures and have closed. Private hospitals give the operator the best opportunity for doing good work. He commonly, in the choice of location, looks after the environments and sanitary conditions of the location, and selects or builds a house suitable to the work, and makes a choice of attendants, the best to be had, the best to be made, in his community, or goes

abroad for better talent than he has at home, regardless of the expense. He concentrates his forces, makes painstaking preparation for all his work, the patient receiving thrice more care before and after operation than in public institutions. In well-managed private institutions the patient has one or more attendants, with well-regulated relays. While visiting my friends owning private hospitals, I commonly find a nurse with each and every patient, doing fancy work, reading and entertaining her patient. The institution is tidy and neat. In public institutions I rarely find a nurse in large wards, the only attendant about the patients being a convalescent patient or an old pelican of an attendant. Professional care, one or many visits daily, favors a speedy convalescence. The early and late assurance that she is doing nicely does a world of good. Fresh beds and the numerous little attentions from young, intelligent nurses favor comfort and confidence.

It is interesting and surprising how much more cheerful patients are in private hospitals than in general, public, or school institutions. The surroundings of the general hospital are generally depressing. Patients are eager or impatient to get home prematurely. In a well-managed private institution they are easily controlled and willing to remain until they are fully convalescent. Hurrying patients out of general hospitals one, two, or three weeks after serious operations results in accidents and complications, postoperative sequelæ, difficult to correct. In private institutions we tack on a well-directed rest-cure treatment which gives pleasing results.

The nurses should all be professional rubbers, receiving twenty or forty lessons in practical massage from a recognized teacher of the subject; one or two months in a diet kitchen, one or two months in the operating room, making a young woman a very valuable nurse in private practice. I much prefer nurses from private institutions to those I commonly meet from public institutions. They are also the choice in wealthy and professional circles. The private hospital is doing the best work, giving the patient the most costly care and attention, refining nursing, elevating the diet kitchen, getting the best results, primary and remote. The church hospital follows with better work than the general or public hospital. The public hospital should be all that is desirable and all that can be attained and can be accomplished by brains and money, and should be the pride of the city or community in which it exists, and should be used for the destitute only. The worthy

poor should have the best. A few private and semi-private institutions have done much to improve general hospitals. The opening of private hospitals in many cities throughout the country resulted in a reorganizing and rebuilding in our old, decomposing general hospital.

I am sorry our profession does not realize or fully appreciate how much the private hospital has done for it and for sufferers. The management of a private institution is simple and uncomplicated. To be president, secretary and treasurer, and sole manager is easy. Never mix matters with a matron and nurse. They can rarely get on together. The widowed sister-in-law of one of the directors of the general hospital ought to favor the resignation of the whole staff. A moral, refined nurse, one that has served in public and in private, whose early home life gave her general practical knowledge of housekeeping, finds her duties sufficiently light.

The character of private houses differs decidedly from old-fashioned homes. The modern house is charged with plumbing and baths, and I am satisfied is not as safe as a house free of plumbing. The preparation for an operation and the enormous amount of time necessary for subsequent visits; the emotional disturbance due to the presence of children, family, and friends; the difficulty in securing relays of nurses, results in the possessor of a private hospital sending about all his patients to it, where he can see and care for often a large number in a limited space of time. If he depends upon a general hospital he has to wait for rooms or beds.

The multiplying of hospitals throughout the country, and the choice of prominent and wealthy citizens for managers and directors, have resulted in an effort on the part of such philanthropists to reduce fees and also the charges for the care of patients. The little hospital in every small city and town, with ten or twenty private rooms, makes the absurd charge of eight and ten dollars per week for neatly furnished rooms. Some of these beds or rooms are endowed. Rarely are such directors willing to pay a fee. They commonly place wife or daughter in the hands of a beginner or inexperienced man, and frequently lose her. Very few of the surgeons doing work in these small hospitals have ever served long apprenticeships in surgery or been resident in a good hospital. They are rarely prepared for the work.

IN MEMORIAM.

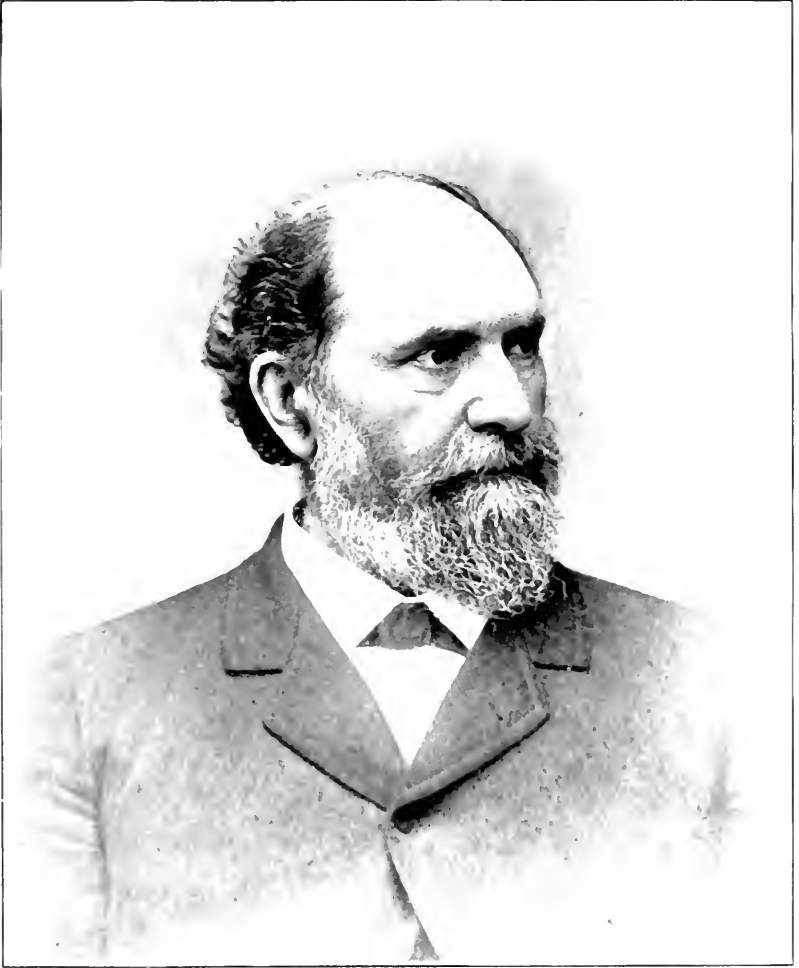
ALEXANDER JOHNSTON CHALMERS SKENE, M.D., LL.D.

(With plate.)

IN the death of Dr. Skene on July 4, 1900, at the age of 62, American gynecology loses one of the last of its famous pioneers, and his city mourns for its greatest physician. He was born in Fyvie, Aberdeenshire, Scotland, June 17, 1838, of a family that has made its name known in Scotch history for nine centuries. His schooling was in Aberdeen and Kings College. He came to America at the age of 19, began the study of medicine three years later at Toronto, matriculated at the University of Michigan in 1861, and was graduated from the Long Island College Hospital in 1863. In that year and the following he served as acting assistant surgeon in the United States Volunteers at Port Royal, Charleston Harbor, and David's Island, prominent in plans for army ambulance work. He kept up his interest in military matters in the National Guard of the State as surgeon to the Twelfth Regiment and First Division, and as lieutenant-colonel on the staff of General Molineux (1884-5).

In 1864 Dr. Skene entered practice in Brooklyn, and within a year had begun his hospital and college work in obstetrics. Professor of both branches of gynecology at 31, he gave his best strength to the Long Island College Hospital, as teacher, as operator, and as dean and president (1886-1893), until the last year of his life. It was he who was most active in securing practical and beautiful plans giving adequate expression to the great Polhemus gift of a college and clinic building. The college owes its most famous alumnus a debt it can never repay.

Dr. Skene was professor of gynecology in the New York Post-Graduate Medical School, 1883-6, and consultant to various hospitals and dispensaries. He was one of the founders of the American Gynecological Society and its tenth president (1886), and founder and honorary president of the International Congress of Gynecology and Obstetrics. He had been president of the Medical Society of Kings County, of



ALEXANDER JOHNSTON CHALMERS SKENE, M.D., LL.D.

the New York Obstetrical and of the Brooklyn Gynecological Society, and was a corresponding or honorary member of many foreign societies, such as those of Paris, Leipzig, Brussels, Edinburgh, London, etc. Aberdeen University conferred on him the degree of LL.D. in 1897.

His books are these: "Diseases of the Bladder and Urethra in Women," 1878 and 1887; "Treatise on Diseases of Women," 1888, 1892, and 1898; "Education and Culture as Related to the Health and Diseases of Women," 1889; "Medical Gynecology," 1895; and "Electro-Hemostasis in Operative Surgery," 1899.

Dr. Skene wrote from a large experience. For thirty-seven years there is hardly a twelvemonth without its paper, and many years show six. He wrote in the hours before breakfast, to avoid interruption, and in writing, as in teaching, his method was clinical, detailed, practical. His huge capacity for work was due to a magnificent physique—his chest girth was forty-four inches. His eye always twinkled with the memory of "last in class, first in field sports." Thus he was able to carry the burdens of college teaching, hospital operating, medical society duties, the large private sanitarium, and an extensive practice. Two days before he died sixty patients came to the office.

Dr. Skene married Annette Wilhelmine Lillian Van der Wegen, of Brussels, Belgium, who survives him. They had no children.

His country home was at Highmount, in the Catskills, where his love of the mountains had full scope, and where he could indulge his affection for animals. There he had more leisure for modelling. His life-size portraits in marble are indeed noteworthy, in view of the scantiness of the time he could give to sculpture.

If one were to attempt an appreciation of Dr. Skene's work, one might select certain items, such as the insistence on gynecological and surgical methods in obstetric work (1877); the well-known observations on the urethral glands, a source of intractable trouble until recognized (1880); the many new instruments devised, the systematic hemostatic treatment of blood vessels and pedicles by heat of moderate degree that dries and does not char (1897)—but these would be but examples of hundreds of worthy contributions swallowed up in the rapid sweep of surgical progress, the import and freshness of which, for their time, we who have benefited by them have little leisure to turn back to consider.

In him progressiveness and originality were balanced with caution and clear sense. Two instances will suffice. In the days when we planned to cure most pelvic pain by removing the ovaries, he was credited with timidity because of his careful restriction of this universal remedy. Again, he was said to be behind the times during the epidemic of vaginal hysterectomy. Yet the profession has come back to the conservatism from which he would not swerve.

Breadth of view was his. From the early days when he was Austin Flint's assistant, he studied his patient as an individual, and overlooked nothing in her general condition nor any detail of constitutional treatment. Such detailed care prepared the patient for operation (or saved her from it, often) and watched her throughout convalescence. His technique was so quiet and seemingly simple that only a brother surgeon appreciated its speed and thoroughness.

Few men concealed more generous deeds. Strong in his likes and dislikes, tenacious of purpose, keen of insight, full of apt anecdote, tactful, discreet, hopeful, inspiring, his impress was strong on those about him. Indeed, throughout all his life runs this personality and force that makes greatness. Character escapes characterization. Personal magnetism eludes biographies. The impress of vigor and simplicity, the attraction of kindness and heartiness—these things may not be written. But the love and devotion he inspired follow after him.

TRANSACTIONS OF THE AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS.

PROCEEDINGS OF THE THIRTEENTH ANNUAL MEETING, HELD IN LOUISVILLE, KENTUCKY, SEPTEMBER 18, 19, AND 20, 1900.

*The President, RUFUS B. HALL, M.D., of Cincinnati,
in the Chair.*

First Day—Morning Session.

An address of welcome was delivered by DR. LEWIS S. McMURTRY, of Louisville, which was responded to by President Hall.

DR. A. GOLDSPOHN, of Chicago, read a paper entitled

ERRONEOUS OBJECTIONS TO BILATERAL INGUINAL CELIOTOMY
AND SHORTENING OF THE ROUND LIGAMENTS VIA THE
DILATED INTERNAL INGUINAL RINGS, AND ITS SUPERIOR
ULTIMATE RESULTS IN SIMPLE AND COMPLICATED
ASEPTIC RETROVERSIONS OF THE UTERUS.¹

DR. CHARLES GREENE CUMSTON, of Boston.—I infer from the remarks of the essayist that the adnexa can be treated with comparative ease through a bilateral incision. From my experience in operating by the abdomen and vagina, as well as from the pathology, it has always seemed to me that serious lesions of the adnexa such as the essayist has treated through a bilateral inguinal incision are usually out of reach, and that these lesions can be dealt with more readily and satisfactorily through a median, a posterior, or an anterior vaginal incision. In my experience simple, uncomplicated cases of retroversion are rare. The Alexander operation in the so called simple cases of retroversion of the uterus can be greatly improved by an additional operation through the posterior cul-de-sac.

DR. EDWARD J. ILL, of Newark, N. J.—Two or three years ago an honored member of this Association brought forward a modified operation for shortening the round ligaments, which the writer designated as a vagary in surgery. The author of that method (Dr. Longyear) is not here. I have tried it and can vouch for the excellence of Dr. Longyear's modification. It certainly would be a vagary if the diagnosis beforehand was in doubt, but Dr. Longyear very definitely and succinctly says that we must have an absolutely movable uterus. There must not be shortening of the utero-sacral ligaments, the existence of an old parametritis, etc. It is this class of cases, which are not frequent, which afford one of the best chances for success with Dr. Longyear's modification, and it certainly ceases to be a vagary.

DR. J. HENRY CARSTENS, of Detroit.—Dr. Alexander told me that he devised his operation for the purpose of having an operative procedure that does not require the opening of the abdomen, and any kind of operation which necessitates opening of the abdomen and doing other things is not an Alexander operation. I do not think Dr. Goldspohn calls it that.

The principal point, it appears to me, is this, What is the matter with the patient? What are we going to accomplish? I agree with Drs. Cumston and Ill that the cases of plain, uncomplicated retroversions of the uterus that require an Alexander operation or shortening of the round ligaments are very rare. I rarely see these cases. I saw one last year, the first one I recall in the last ten years, which was a simple, uncomplicated, non-adherent uterus that required an Alexander operation. The other cases I have seen required some other

¹ See original article, p. 613.

operative procedure. If a woman has a pus tube, a diseased uterus, or a diseased ovary; if she has a thickening of the broad ligaments, tuberculosis, or any other disease of those parts, is the case a proper one for shortening of the round ligament? From my standpoint and experience it is not. It is a great deal better to make a good-sized incision through the abdomen, so that you can get at the parts with the patient in the Trendelenburg position, than to make two incisions and a small opening on one side and try to do complete surgery through such an orifice. It does not seem to me reasonable. A woman who has any of the pathological conditions discussed in the paper ought to have an abdominal incision made, one tube or the other removed, and the uterus stitched forward. There are various ways of doing this, according to the particular case.

DR. W. E. B. DAVIS, of Birmingham, Ala.—The tendency is to go to extremes in advocating new operative procedures for the class of cases under discussion. Unquestionably the essayist has done good and efficient work and has justified members of the profession in undertaking the operation he has described. The Alexander operation of shortening the round ligaments should be performed in those cases where women can be relieved by wearing pessaries. If a woman can wear a pessary satisfactorily she can be relieved by the ordinary round-ligament operation. This is a test that has been made by a great many operators, and I have made it repeatedly myself. If the case is one of marked disease (and men of experience can usually determine this without opening the abdomen) most of us would hardly think of removing the diseased adnexa through a bilateral inguinal incision. The operation described by Dr. Goldspohn seems to be indicated in cases where we fail to make out gross disease and in which, after we have opened the inguinal canal, we have more or less trouble in getting the ligament up. I think it is much better to deal with such cases through the abdomen, as we can do more complete and efficient work.

DR. FREDERIC COGGESHALL, of Boston (by invitation).—I have done about 113 Alexander operations, but in the great majority of cases the operation has been done in connection with something else. My experience has been that in the few cases of simple, uncomplicated retroversions of the uterus the organ can be easily replaced. Those are the cases in which a simple Alexander operation is easy. I have performed an operation similar to the one described by Dr. Goldspohn in three cases, in all of which I failed to find the ligament by the ordinary operation. What impressed me as being an objection to this method of operating is that if we have much disease of the adnexa there is almost invariably associated with it prolapse, and I believe we can get at the diseased structures more easily through a posterior vaginal incision and then do what is necessary.

DR. RUFUS B. HALL, of Cincinnati, O.—The old operation,

advocated so strenuously by one of our Fellows this morning, of a terior fixation or suspension of the uterus, is not as popular as it formerly was. It is a method that, in all probability, will soon be abandoned. Surgeons dislike to discuss their failures and disappointments following operations. The majority of men are not inclined to do so. I do not believe that the anterior fixation operation or suspension of the uterus is the method that will stand the test. There have been a number of cases reported in which incarcerated bowel has formed an internal hernia due to this operation. I have placed on record two or three such cases myself. I have come to the point when I refuse to stitch the uterus to the anterior abdominal wall for the relief of any condition. It is better for a woman, if driven to desperation and both ovaries are removed, if she is near the menopause or one ovary has been removed, to sacrifice her uterus by having a hysterectomy performed than to stitch the organ to the abdominal wall. The Alexander operation has been disappointing for various reasons which I do not care to enumerate at this time. I have not done any of these operations; I have been opposed to this method of Alexander and have spoken against it a number of times. However, I have read the contributions of Dr. Goldspohn carefully, and he has almost converted me to his way of thinking. I am going to witness some of these operations. I wish to commend his method of operating, and I believe he is working in the right direction for the relief of this condition.

DR. GOLDSPOHN (closing the discussion).—The remarks of Drs. Cumston and Carstens are hardly pertinent to the subject, because the title of my paper distinctly says "aseptic cases." Therefore there is no intention of dealing with pus tubes or tubercular tubes in connection with this operation, unless it is a matter of pure accident, as it was in one case—that of a girl with tubercular pus tubes. The uterus was bound down, as well as the appendages; the parts were so solid and relatively void of tenderness as to make it probable that there was no likelihood of a septic condition being present. The tubes were as hard as my finger, and in enucleating them I did not rupture them. I simply have back of this principle of working in the abdomen the general broad custom, based on the numerous laparatomies done by Lawson Tait, Joseph Price, and their disciples, of doing the best for women by touch and not by sight. I can prove to any Fellow that he can reach the organs by one finger in the incision in the dilated inguinal ring and two fingers in the incision rather high up midway between the symphysis and umbilicus; and if he wants to get a retroverted, adherent uterus out of the cul-de-sac I can satisfy him in regard to that, if he wants an opportunity of seeing it done.

DR. D. TOD GILLIAM, of Columbus, Ohio, read a paper on

ROUND-LIGAMENT VENTROSUSPENSION OF THE UTERUS.

The steps of his operation are as follows :

1. A median abdominal section three or four inches in length and at the usual site between the umbilicus and pubes.

2. The adhesions are broken up and the fundus brought forward, after which the patient is placed in the Trendelenburg position.

3. Seize the round ligament on one side and bring it to the opening. This may be done either by the fingers or by the aid of forceps.

4. Carry a thread under the ligament at a distance of about one and a inches from the uterus. The free ends of the thread are brought out of the abdomen and secured by clamp forceps.

5. The other round ligament is secured in the same way.

6. Expose the rectus muscle near the lower end of the incision by retracting its sheath and by rolling it out of its sheath on the tips of two fingers applied to the peritoneal surface under it.

7. Select a point one inch external to the margin of the incision and something over an inch above the pubes, through which the perforating forceps, specially devised for this purpose, is thrust into the peritoneal cavity. The two fingers already in the cavity guard the instrument in its passage and place the thread, which surrounds the ligament, within its jaws.

8. The perforating forceps is now withdrawn, after removing the clamp forceps from the thread, and both thread and ligament are brought up through the perforated wound in the abdomen.

9. While the ligament is held taut, fasten it into the wound by a to-and-fro catgut suture passed deeply through the ligament and including the tissues on either side.

10. Treat the opposite side in the same manner and close the median abdominal incision. Rigid observance of all the rules of aseptic surgery is essential to prevent suppuration, and only a small loop of the ligament should be drawn up through the wound.

DR. W. E. B. DAVIS, of Birmingham, Ala.—It occurs to me that making an opening in a direct line through the abdominal wall would subject the patient to great risk of hernia afterward. The abdominal pressure would naturally be against this opening constantly, and the tendency of the ligament would be perhaps to enlarge the opening. In cases where there are vessels. Nature has wisely provided against the occurrence of intra-abdominal pressure in such a way that the pressure will close the opening. In these cases I should think the pressure would be such as to open the canal which the ligament occupies.

DR. A. GOLDSPOHN, of Chicago.—I have positive doubts as to the permanency of the results following the operation that has been described. We do not seem to know exactly what the round ligaments in the ordinary healthy woman are for. We think they are for the purpose of holding the uterus forward, but

that is not the only thing that they do in all cases. They have great capabilities which we can utilize to advantage, and use them best, as the essayist admits, in shortening them and in anchoring them in a forward direction. But that is poisoning the uterus forward, and not hanging it by them. Whether the uterus, after being suspended by the ligaments, will be anteverted so that intra-abdominal pressure will do the work, as it does in many instances by other normal means, I question; and if intra-abdominal pressure is not invited to do this, then no round ligament will be able to hold the uterus in position against this overpowering force.

DR. J. HENRY CARSTENS, of Detroit.—Cases that necessitate the opening of the abdomen require a vaginal hysterectomy when near the menopause. With this operation the uterus, ovaries, and tubes can be removed with comparatively little danger, and the woman after it is well. If you simply do an operation which has for its object the removal of an ovary or ovaries, and shorten the round ligaments, a big, heavy uterus is left behind, which is always likely to sag and cause trouble, and the chances are you may have to do a secondary operation for its removal. I would plead, therefore, for a thorough and radical operation in these cases, believing that it is a serious thing to open a woman's abdomen a second time. If we do thorough, radical work at the primary operation, we are reasonably certain that the patient will be cured and she will not require another operation.

DR. RUFUS B. HALL, of Cincinnati, O.—When the essayist published this method of shortening the round ligaments in THE AMERICAN JOURNAL OF OBSTETRICS AND DISEASES OF WOMEN, a copy of the journal came to my table one morning at about half past eight. On that morning I was to do a section on a woman, a school teacher 30 years of age, unmarried, for what proved to be a dermoid tumor, about the size of an orange, situated behind the uterus. She had been under the care of physicians off and on for five years for retroverted uterus. From the clinical history she undoubtedly had a tumor all this time. She had a flail-like uterus which was non-adherent. I read the description of the operation and looked at the pictures and cuts of instruments. Within thirty minutes after reading the article I was in the operating room, and operated for the removal of this dermoid tumor. The uterus was retroverted, and the dermoid tumor was adherent to the side of the pelvis, making a mass about the size of a small cocoanut. She had a good ovary on one side, and this I wanted to save. I made the operation, modifying the technique, and I must say that I have never had a more satisfactory result than this one. The patient showered blessings on me for having relieved her. Since that time I have operated in a similar manner upon twelve or fifteen cases with excellent results.

DR. RICHARD DOUGLAS, of Nashville, Tenn.—I have had experience with this operation in three cases only, and I was

led to employ a slight modification in the technique. When the ligature that is around the round ligament is brought through the peritoneum and through the muscle and secured, it practically embraces only peritoneal tissue. The muscular tissue is so soft and yielding that there is not a very firm hold, and we practically have peritoneal suspension of the round ligament. I recognize the fact that it is best to implant the round ligament next to the muscle, as the doctor has advocated; therefore I leave the round ligament beneath the sheath, bring the ligature through the sheath, and tie it over. I used that method in three cases in which I did this operation.

DR. GILLIAM (closing the discussion).—I have been looking for years for some kind of operation by which we could suspend the uterus so as not to interfere with the functions of the organ during gestation and parturition, and I wanted, at the same time, to find a method that was simple and practicable and one that everybody could do. I have done the operations of fixation and ventrosuspension by the Kelly and other methods, and have performed these operations when I felt self-condemned for doing so, yet there was no other recourse. I was glad to find a method of utilizing the natural supports of the uterus by doing an operation that is easy of execution and gives us the results we are looking for. Anybody who can do an abdominal section can do this operation and do it quickly. It does not take much time. Of course we have not been practising this method very long (I believe a little over a year), consequently we have not had opportunities of witnessing results following pregnancy and of seeing whether any untoward results will follow it. But theoretically there should nothing of this kind occur.

First Day—Afternoon Session.

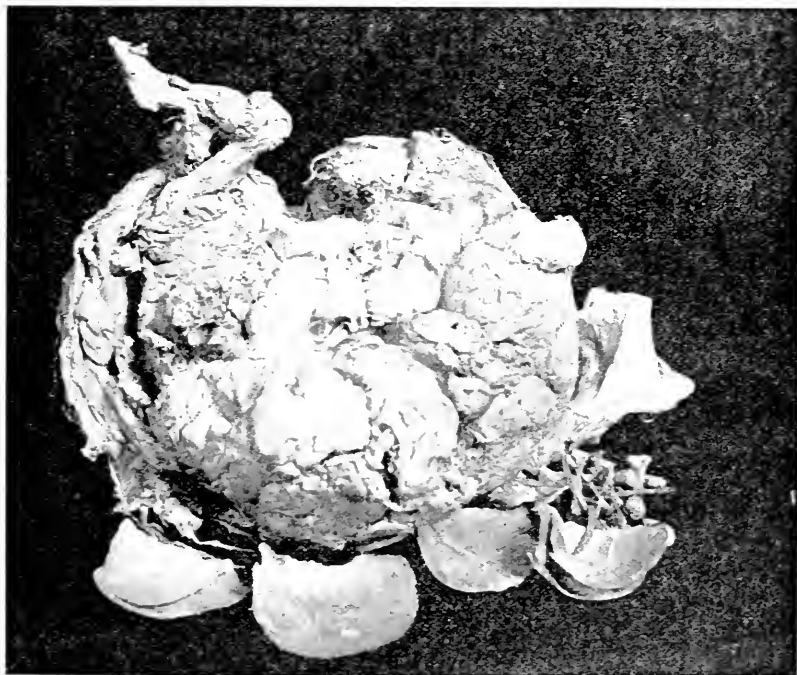
DR. W. E. B. DAVIS, of Birmingham, Ala., read the report of a case of

COMPOSITE TERATOMA OF THE OVARY.

Microscopic examination of sections of tissue selected from all portions of the tumor shows a very complex histologic structure. Some portions of the tissue are composed of simple, fully developed adipose tissue enclosing occasional bands of unstriped muscular tissue, the whole surrounded by fully developed and practically perfect skin. The skin contains sebaceous and sweat glands in considerable quantities, and hair follicles with hairs in position. The sebaceous glands are larger than those found in normal skin. Other portions show true myxomatous tissue, still others cartilage and early stages of osseous development.

Sections from the walls of cysts show the inner surface of

some to be lined by almost true skin; the epithelial layers lie internally (lining cyst), the papillary portion (cutis) lying externally. Sebaceous and sweat glands occur in these sections, and frequently they may be seen opening into the cysts. Other cysts are lined by a simple layer of low cubical epithelium, either in uniform arrangement or thrown into folds or villi, similar to the formations found in uncomplicated cystic papillomatous adenoma of the ovary. The lining of other cysts is made up in some parts of flat or squamous epithelium, in other parts by columnar or cubical epithelium of the glan-



Composite teratoma of ovary.

dular type, and frequently one kind of epithelium passes over into the other.

DR. CHARLES GREENE CUMSTON, of Boston, Mass., read a paper on

TREATMENT OF CHRONIC CYSTITIS IN THE FEMALE BY
CURETTEMENT OF THE BLADDER AND INSTILLATIONS
OF CORROSIVE SUBLIMATE.

Tuberculosis of the bladder is frequent as a primary lesion, and the seat of tuberculous lesions in the bladder, and those of chronic non-tuberculous cystitis, have been carefully studied

and described by Clado. According to him, the principal, and nearly exclusive, seat of these lesions is in the mucous membrane of the urinary reservoir. The tuberculous granulation has its starting point in the mucous membrane itself, and particularly in that part of the mucous tissue which is in contact with the epithelium of the bladder; in other words, in the most superficial layers of the structures composing the organ. In a bladder in which ulceration has not yet taken place the granulations, when they are still small, project very perceptibly above the surface of the mucous membrane. When ulceration has taken place the lesion may be quite deep, and may even involve or extend beyond the muscular structures. But along with these, other ulcerations will be found which are so superficial that they hardly more than implicate the mucous membrane. If a section is made through one of these granulations, or through a superficial ulceration of the mucous membrane, the microscope will show that the granulation has developed immediately under the epithelium and projects directly into the cavity of the bladder; the epithelium has disappeared at the site of the lesions. Under the tubercle the mucous membrane may be nearly normal or thickened. The tubercle does not involve the deeper layer of the mucous membrane at the beginning of its development.

In chronic cystitis, as in the tuberculous form of the affection, the mucous membrane is also the almost exclusive location of the lesions. It is softened and is easily torn when the surface of the bladder is scraped with a sharp instrument or with a dull one. The mucous membrane is thickened and only adheres slightly to the underlying structures, while in certain cases the pathological process may have given rise to the production of false membranes, granulations, and villous productions. The lesions show a marked predilection for certain parts of the bladder and the urethra, such as the trigonum, around the mouths of the ureters, the neck of the bladder, and posterior urethra. When the lesions involve the entire surface of the organ—a condition which is rather exceptional—the above-mentioned parts, and more especially the neck of the bladder, are particularly involved, and the lesions here will be found of longer standing and more advanced in their evolution. It is easy to reach the diseased structures with a curette, provided that they are very superficial and not far away from the neck of the bladder. In tuberculosis the disease attacks the bladder probably quite as often as the kidney, and consequently it may be assumed that in certain cases a radical cure of tuberculous cystitis may be obtained.

The bladder being completely empty, one or two fingers are introduced into the vagina, and with them the anterior cul-de-sac is pushed upward and forward. The anterior aspect of the bladder can be curetted by the resistance offered by the pubis, while the posterior surface can be gone over with the curette against the fingers introduced into the vagina. The apex and the lateral borders are less easily reached by the

instrument. According to Guyon, corrosive sublimate may be employed advantageously in all cases of cystitis, and the result of its use will, in a large measure, be successful.

In gonorrheal cystitis sublimate instillations, both in male and female, have given excellent results, but they are particularly applicable in the chronic forms which persist indefinitely, even though all urethral discharge has disappeared. In chronic gonorrheal cystitis, which is often rebellious to treatment with nitrate or citrate of silver, sublimate instillations give excellent results.

In cases of acute cystitis or those produced by catheterization, and in those cases where the nature of the affection is still imperfectly understood, and which are more particularly met with in the female, the author has obtained excellent results with instillations of sublimate. Instillations of sublimate may be employed with advantage in all cases of cystitis, and the effect is still more remarkable in the tuberculous variety, as well as in all those cases in which pain is a predominating element.

The instruments necessary for intravesical instillations are a syringe with a capacity of four cubic centimetres—preferably one made with a glass reservoir and rubber mountings, so that the salt will not attack it—and a small perforated bulbous catheter, not larger than a 12 or 14 French scale. The patient should be instructed to empty the bladder immediately before the operation, so that the therapeutical agent will not be diluted by the urine, and also so that it may come into direct contact with the lesions. The syringe is then filled with the solution, its point is introduced into the end of the sound, and a little of the solution pushed through it so as to drive out the air. The sound is then gently introduced into the bladder and the quantity of liquid is slowly injected. During this treatment the physician can only be guided by an attentive observation of the effects produced and the results obtained. After the sound has been withdrawn the patient should be told to turn first on one side, then on the other, and then on the abdomen, so that the solution shall come in contact with all parts of the mucous surface of the organ. The instillations should be given every day, so that the bladder can be kept in as constant a state of antiseptis as possible; but it is more prudent, when the use of rather strong solutions is reached, such as 1:2000, 1:1000, or 1:500, to carry out the treatment in the first place only every other day, and after this, when it is well borne by the patient, to continue it every day. This question is entirely one of judgment on the part of the surgeon. The strength of the solution is to be progressively increased according to the tolerance of the mucous membrane of the bladder. It may be said that in recent cases of cystitis, no matter what their nature may be, it is useless to use solutions stronger than 1:2000 or 1:1500.

As to the quantity of liquid to be instilled, it has seemed to the writer that from two to four cubic centimetres is the proper amount.

The instruments necessary for curettement of the bladder are few and simple. A long, narrow Recamier uterine curette, a large metal catheter with two good-sized eyes, and an irrigator are all that are necessary. He has tried to curette the bladder through Kelly's cystoscopes, but has not been able to accomplish anything. For this operation general narcosis is necessary.

The patient is placed in the lithotomy position, and, after the external genital organs and the vagina have been rendered entirely aseptic, the bladder is thoroughly irrigated with a three per cent solution of boric acid under a sufficient pressure so that the irrigation may be thorough, and after a litre or two have been used the bladder is to be completely emptied. Two fingers of the left hand are introduced into the vagina and the curette is then inserted into the bladder. The fingers in the vagina should be made to reach the anterior cul-de-sac, and then by upward pressure they are made to form a resisting surface over which the curette is drawn from above downward. A certain amount of force is necessary to scrape the mucous membrane, but care must be taken not to perforate the bladder. The operation is terminated by a very abundant irrigation of salt solution, because every atom of debris of mucous membrane, fungous particles, and blood clots must be completely removed from the organ; for if they should accumulate within it and should undergo decomposition, they would naturally be a source of infection. A Pezzer sound is then introduced and the patient put to bed.

The after-effects of the operation are very simple. The author has never known any hemorrhage amounting to anything to occur, but if much blood be lost a four per cent solution of antipyrin in irrigations or an instillation of a concentrated solution of ferripyrin will easily control the bleeding.

Conclusions.—1. Sublimate instillations will often produce a very great improvement in the distressing symptoms met with in both tuberculous and non-tuberculous cystitis, such as a diminution in the frequency of micturition, a decrease of the pain, an increase in the capacity of the bladder, and an improvement in the condition of the urine. In some cases a complete cure may be had.

2. When the instillations fail to produce the desired effect, curettement of the bladder is indicated in both tuberculous and non-tuberculous cystitis.

3. In gonorrheal cystitis instillations of sublimate are very efficacious and rapidly subdue pain.

4. Under favorable circumstances a radical cure of primary tuberculous cystitis may be obtained by curettement when the vesical lesions are localized and the kidneys free from the disease. Curettement per urethram will not allow the surgeon to reach the entire surface of the bladder, so that when the lesions are extensive they should be directly treated by suprapubic cystotomy.

5. Much relief may be afforded to a large number of pa-

tients suffering from tuberculosis of the bladder, but who, on account of the advanced stage of generalized infection, are in no condition to undergo a more radical operation.

6. When cystitis is due to a prolapsus of the genital organs, and when hysteropexy, combined with anterior and posterior colporrhaphy, does not relieve the bladder symptoms, curettement of the bladder followed by sublimate instillations is the proper treatment.

DR. A. GOLDSPOHN, of Chicago.—I do not feel kindly disposed toward the mechanical treatment of the mucous membrane of the bladder without sight. The bladder being a membranous organ, entirely different in that respect from the uterus, we do not get the tactile intelligence imparted by the curette, the same as we do in curetting the uterus. Of course, we get some tactile information from the instrument that we are operating with, in that it tells us whether to do more or less, or in which direction to work more or less. The curette will not recognize any infiltrations at this stage of the disease process in the bladder: it will not recognize any beginning ulcerations or papilliform growths in the bladder. Scraping the bladder, then, with a curette must be largely done at random, without sight, without any tactile sensation to govern the operator as to how much or how little surface he shall curette. Under these conditions it is not rational to assume that the mucous lining of the bladder will be evenly and uniformly dealt with.

As to instillations of bichloride of mercury, we have other chemical antiseptics that are better in their penetrating qualities. Carbolic acid will penetrate the mucous membrane, through gelatinous or oily substances, better than bichloride of mercury. The action of corrosive sublimate in the bladder must be more or less superficial, in that it will not destroy the infecting agents left in the islands that the curette did not remove, and the result of the action of this antiseptic would not be satisfactory. In the treatment of infective cystitis, not tubercular, but speaking of gonorrheal and other forms of infective cystitis, particularly those forms that result from the introduction of catheters and after operations, I have obtained excellent results from the use of one-half to one per cent of oil of cloves in water. Following the suggestion made by Koch some fifteen years ago, that the tubercle bacillus is crippled by a solution of something like 1 in 10,000 or 12,000 of the oil of cloves in water, clinicians in Germany and elsewhere were very quick to take this matter up, and it has been used in typhoid fever and other affections internally.

DR. J. HENRY CARSTENS, of Detroit.—While Dr. Cumston may have had good results with this method of treatment, still I agree with Dr. Goldspohn that it appears unreasonable to curette the bladder. We cannot curette the whole surface of this organ, and consequently there will be certain points that will remain unaffected by the use of this instrument. I have obtained excellent results, in the treatment of this class of cases,

from the use of permanganate of potash. I have been able to effect cures in gonorrheal and septic infections with the judicious use of permanganate of potash. I inject the bladder with as much permanganate of potash as the patient can stand. The first time the patient may not be able to stand more than an ounce or so. I instruct the patient to hold it as long as she can, then void it. After a while they are able to hold five or six ounces of it in the bladder for half an hour, perhaps longer. In a few days they will tolerate this amount of solution in the bladder without any trouble, so that one may increase the permanganate of potash from five grains to the pint to ultimately ten grains to the pint. When this treatment is carried out for about ten days the patient is cured.

DR. EDWIN RICKETTS, of Cincinnati.—Too much stress cannot be laid upon over-distension of the bladder in connection with this or any other treatment.

DR. RUFUS B. HALL, of Cincinnati.—In cases of chronic cystitis the object we wish to attain is sometimes frustrated by over-distension of the bladder, and the patient is made worse by it. I believe that moderate distension of the bladder, up to the point that the patient feels a discomfort, is the limit of safety. I would like the subsequent speakers to dwell on the point of over-distension of the organ.

DR. JAMES T. JELKS, of Hot Springs, Ark.—The bladder is always distended, and we can distend it as much with one drachm of water as we can with one pint. Sir Henry Thompson demonstrated years ago that if we wish to wash out the bladder we should use a pint of water sixteen times instead of one time. This is an important point to remember. One ounce of water is all we need to wash out the bladder. If we wish more water introduced into the organ, or another ounce, we should continue doing so until the water comes out free from contaminating discharges.

I wish to congratulate Dr. Cumston on his success with this treatment. I think I shall try it when I get home.

I want to indorse what Dr. Carstens has said about permanganate of potash. I regard it as an invaluable remedy for any infective disease of the bladder, particularly gonorrheal infections. As to its strength, 1:6000 is strong enough to start with.

DR. T. J. CROFFORD, of Memphis, Tenn.—I have performed the operation of curettage of the bladder a number of times. When the inflammation is confined to the neck of the organ or thereabouts, and most of them are chronic cases, there is no great difficulty in curetting all of that surface. I do not think any islands would be left. When the disease has been confined to the neck of the bladder, I have obtained great benefit from the use of the curette in chronic cases.

DR. A. GOLDSPOHN, of Chicago.—I do not wish to be understood as being opposed to curetting the bladder *in toto*, but I believe it ought to be done either under the guidance of the eye or tactile sense. The former is now possible by the use of

a new urethroscope, made at Rochester, New York, with an electric-lamp attachment. This new device does not generate heat, which was one of the difficulties heretofore. The instrument can be used inside of the body and does not generate heat enough to cause any harm.

DR. CUMSTON (closing the discussion).—In speaking of the pathology of bladder lesions, I stated that they were almost always situated in the trigonum, consequently this is the portion we wish to reach. In one of my conclusions I stated that when the disease process was scattered all over the bladder, a suprapubic cystotomy was the operation of choice and that curettement would not do any good. Every one of my cases was examined cystoscopically.

As to the treatment of tuberculous cystitis with oil of cloves, I have had no experience. I have heard of oil of cloves being used in tuberculosis of other organs. In this connection I will say that I do not know that any one has ever spoken of the treatment of tubercular ulcerations of the bladder with lactic acid. In the case of a child I obtained an excellent result from its use, but this is the only case in which I have used it.

All I can say is that "the proof of the pudding is in the eating." I have been surprised how much suffering can be relieved by instillations, in some cases combined with curettement and drainage. My results have been exceptionally good by this method of treatment. I trust you will give it a trial.

DR. HENRY HOWITT, of Guelph, Ont., contributed a paper entitled

NOTES OF FOUR CASES OF PERFORATED GASTRIC ULCER, WITH REMARKS.¹

DR. RICHARD DOUGLAS, of Nashville, Tenn.—I have not had any operative experience with gastric ulcer. I unfortunately have had cases with perforation, and two cases in which I urged operation; while preparations were being made to operate on one of them the patient died. In the other case an operation was refused. Postmortem examination revealed perforations in both of these cases. In one the ulcer was situated on the posterior wall of the stomach; in the other, the lesser curvature. Were I to carry out the teachings of Dr. Howitt, I should go home and operate upon the cases of gastric ulcer that I have under my observation and care now. I feel a little inclined to follow his advice. Postmortem examinations show many cicatrices at the site of former ulcerations, and it is only a very small percentage of the cases that result in perforation.

DR. JAMES F. W. ROSS, of Toronto, Ont.—In the first place, I would like to compliment Dr. Howitt upon his excellent paper. I have had one successful operative case of perforated gastric ulcer. One point I would like to mention is

¹ See original article, p. 592.

that there is no physician or surgeon living who can diagnose gastric ulcer in some cases. The patient operated upon by me did not know she had anything seriously the matter with her. At about 7 o'clock in the evening the patient went out for a walk, after eating, and was suddenly prostrated, so that it became necessary to carry her into a neighboring drug store. A physician near by was sent for and gave her some water, which she drank. Her appearance was such as to make the doctor suspicious that she might have a perforation inside, and so he asked me to see the case. I went and saw her, and came to the conclusion, after noticing the rigidity of the abdominal wall muscles, which Dr. Howitt has mentioned as one of the most marked signs, with sudden pain in that neighborhood, that there was something seriously wrong inside. I went home, got my operating satchel, and we operated by lamplight in the parlor at 3 o'clock in the morning. The thing was so sudden that I insisted on having the mother come in to see the forceps pass through the perforation into the stomach, so that she would be satisfied if the girl died. There was a good deal of discharge, which was mopped out very thoroughly; a small glass drainage tube was introduced and the opening closed. The patient recovered.

This case occurred at a time when we used drainage more frequently than we do now.

In looking up the literature of the subject, I find that the only cases that have recovered are those that were operated upon early. I differ from Dr. Howitt in regard to the advisability of operating on every case of perforating gastric ulcer. Even if the case is bad and there has been hemorrhage, why should we withhold our hands under such circumstances? Simply because we do not know whether or not there is perforation? When once perforation has taken place we see at once where the ulcer is situated, but up to that time I should be a little afraid to excise the site at which the ulcer is situated, if I should find it.

DR. CHARLES GREENE CUMSTON, of Boston.—In all of the cases I have seen of perforating gastric ulcer, with the exception of one, the lesion was unknown before the perforation had occurred. In one case I saw at the Polyclinic in Geneva we had two ulcers of exactly the same histological composition, one in the stomach, and the other situated in the posterior vaginal wall near the cervix, both of which were discovered at autopsy. Both were of embolic origin, associated with arteriosclerosis. I have not seen gastro-enterostomy performed in any of these cases. In three of the cases I have seen, excision of the border of the ulcer was sufficient, and the wound closed with drainage.

DR. W. E. B. DAVIS, of Birmingham, Ala.—My experience in this line of surgical work is limited. I have never operated for perforating ulcer of the stomach. I have had two cases, however, which I should have operated upon, as the symptoms were sufficiently marked to warrant me in so doing, but I was

not brave enough to undertake it. I remember to have had one case in which an abscess followed ulceration of the stomach, the abscess being subsequently drained, and the condition was easy to manage. I have been convinced for a long time that where the symptoms are very marked and strongly indicative of ulceration of the stomach, the surgeon is warranted in at least making an exploratory operation, and if an ulcer is found it is a comparatively easy matter to excise the ulcerated area and stitch up the opening.

DR. EDWIN RICKETTS, of Cincinnati.—A few words as to diagnosis. In 1880 I saw a woman, 48 years of age, who had suffered from gastric ulcer for three years. She was under my treatment during that time, and her hemorrhages from the stomach were quite severe. She was placed upon rectal alimentation in 1879 and gained sixty pounds of flesh, and then passed out of my hands for a time. She committed some indiscretion in diet, and later consulted another physician, who made a diagnosis of cancer of the pylorus. She went from bad to worse, and finally died. A postmortem examination revealed a perforating ulcer, the size of a lead pencil, on the anterior surface near the pylorus. I have never seen a peritoneum in such a condition since. There was great distension of the abdomen. It was with a great deal of interest to me that the postmortem was made and showed a perforating ulcer, after an eminent physician had disagreed with me in the diagnosis. I thought then, as I do now, that surgery should have a chance in such cases. It has not been my fortune to have a similar case come under my observation from that time to this. I believe these cases should be dealt with surgically, and the time is coming when we will be able to locate these ulcers after the abdomen has been opened and the stomach explored by incision.

DR. F. W. McRAE, of Atlanta, Ga. (by invitation).—I have had no experience with operative procedures for gastric ulcers. The cases cited by Dr. Howitt are exceedingly interesting, and the problems we have to deal with here are very similar to those we are constantly dealing with in other abdominal operations. I wish to heartily indorse that part of his paper with reference to operation for gastric ulcer before perforation has taken place. It is one of the most important points in the paper. The work of Mayo, of Rochester, Minn., and others is sufficient to justify surgeons in undertaking operative intervention in this class of cases.

As to evisceration, it is a thing which I dread to do. Where this is practised it leads me to believe that the danger of subsequent paresis of the bowel is very greatly increased. There are cases where it is necessary to do it, but it should be done only in extreme cases, where the conditions are such that they cannot be dealt with without evisceration. The intestines can be examined thoroughly in cases of gunshot wounds, without taking them out of the abdominal cavity, by taking only a small portion at a time, stripping, and observing care-

fully. I have done this repeatedly, and have gone over the whole alimentary canal with only a small portion of the intestines out at a time.

DR. A. VANDER VEER, of Albany, N. Y.—The paper of Dr. Howitt is very instructive and of great value to us. Some few years ago I published a paper on gastric ulcer, reporting therein a case that had come under my observation of perforating gastric ulcer in which the patient died within a few hours after perforation had taken place. This case occurred before we did operations for this lesion. In that paper I spoke of the use of nitrate of silver, which has been of great service. I followed my cases carefully, and two of them ultimately resulted in carcinoma of the pyloric end of the stomach. I have operated on cases of gastric ulcer which were not quite as acute as those Dr. Howitt refers to. The cases I have operated upon have had evidences of perforation, and in one case particularly there were adhesions which limited the amount of contents of the stomach escaping into the peritoneal cavity. The operation was comparatively easy, aside from loosening up the adhesions. I am satisfied, from the number of cases I have operated upon and in which I have performed gastro-intestinal anastomosis, that we have to deal with the cicatrices resulting from gastric ulcer in quite a good many instances.

DR. D. TOD GILLIAM, of Columbus, O.—I believe, when the time comes that we can make anything like an accurate diagnosis of these cases, we should proceed immediately to operate, or at least do an exploratory operation.

There is only one point I desire to speak of, and that is with reference to the use of peroxide of hydrogen in the abdominal cavity. I have used it in localized disturbances in the peritoneal cavity, but recall one instance in which, after the persistent use of peroxide of hydrogen, there was retardation of the healing process. I believe, therefore, that its persistent use retards healing in many cases. This one thing has caused me largely to discontinue its use.

DR. HOWITT (closing the discussion).—I regret that no one has referred to the suggestion I made in my paper in reference to the introduction of nutritive enemata during the operation in these cases. I believe that in desperate cases at times it will turn the tide. I do not wish to be understood as advocating operation in all cases of gastric ulcer, but I am an advocate of it in a certain number of cases, particularly in those in which we have more or less interference with the calibre of the pyloric orifice. In cases in which patients have suffered for a long period of years, have had severe gastralgia, and their lives have been miserable, I can see no objection to making at least an exploratory incision and, if possible, relieving the condition.

First Day—Evening Session.

DR. A. VANDER VEER, of Albany, read a paper entitled

SOME POINTS REGARDING SURGERY OF THE GALL BLADDER.¹

DR. EDWIN RICKETTS, of Cincinnati, O.—Shortly after my pupillage with Mr. Tait, and soon after my return to Cincinnati, I was called to see a prominent physician. I examined him carefully, and, in spite of some experience I had had in gall-bladder surgery, I made a diagnosis of cancer of the liver. That was in 1888. This poor physician grew worse and died. A postmortem examination was made, and half a dozen gallstones as large as the largest presented here this evening were removed. This case was a sad lesson to me. I can assure you.

As to the use of the Murphy button in surgery of the gall tract, I have had some experience with it. Some theoretical objections have been advanced—namely, that on account of the opening of the gall bladder into the intestine the former becomes infected. I must say that my experience with the anastomosis button as devised by Murphy is not in keeping with this theoretical conclusion of some operators.

As to cholecystotomy, I think it the best operation in the majority of cases, for the reason that it is well in hand: we do not close the wound immediately, and there is ample opportunity for effective drainage. Sometimes, after we think we have removed all of the gallstones, other calculi, from some source or other, are washed into the field of operation and are easily removed.

As to the pouch spoken of by the essayist, I have never made use of drainage through it, but it seems eminently feasible.

DR. D. TOD GILLIAM, of Columbus, O.—I have had three or four cases of gallstones in the last two weeks.

With reference to mistaken diagnoses, I wish to say that, like Drs. Ricketts and Vander Veer and other surgeons, not infrequently a diagnosis of cancer of the gall bladder or of the liver or stomach is made in cases of gallstones. I recall the first case I ever had in which a mistaken diagnosis was made. This case came under my observation about thirty years ago, before surgeons were doing much gall-bladder surgery. I saw a postmortem on a case that had been diagnosticated as cancer of the pyloric end of the stomach. The patient presented almost every symptom of that affection, in that she would retain food sometimes for two or three days at a time or longer, and then eject all the contents of the stomach. She had the peculiar hue which we find in cases of cancer—namely, a lemon color—associated with marked emaciation, etc. We cut down and found cancer of the pyloric orifice, and upon closer investigation a large gallstone was found impacted in the common duct, pressing against the pyloric orifice so as to occlude the opening entirely. This case was a lesson to me in diagnosis. (Other instructive cases were detailed by Dr. Gilliam.)

¹ See original article, p. 683.

DR. LEWIS S. McMURTRY, of Louisville, Ky.—Dr. Vander Veer has called attention to the value of a lumbar incision for draining the peritoneal pocket and the gall bladder. While this may be a very good method of drainage, still transperitoneal drainage is so satisfactory in this line of work that we are not driven necessarily to the lumbar route if it is not convenient. Taking the work of Mr. Tait, and in fact all of the gall-bladder surgery, including the work of Mayo Robson, Vander Veer, and others, it will be discovered that there is no other department in abdominal surgery that yields such successful results as this. According to Dr. Vander Veer, bile is not intensely poisonous, consequently this particular area of peritoneum is more accessible and can be more readily drained than any other part of the peritoneal cavity. Take the operators in this room, the men who have done gall-bladder surgery; if they relate their experiences, considering the gravity of the cases and the number of operations done, the mortality is less than in any other department of abdominal surgery. Hence drainage transperitoneally by gauze packing and shutting off the general peritoneal cavity, making a tract by adhesions around externally, is thoroughly satisfactory, while the same method of gauze packing for purulent collections in other portions of the abdominal cavity will not succeed so admirably.

I recall a case that I saw during the past six months, of a woman who had the largest gallstone that I have ever seen except one, and that one was found post mortem. This gallstone was impacted in the cystic duct. For nine weeks the woman had had one continuous attack of biliary colic. She was taking from six to ten grains of morphine hypodermatically a day. She was practically insane. Her tongue was intensely coated; her complexion was of a leaden, sallow hue; she was in a wretched condition. Any one who had made a general survey of her condition would have considered the case unsuitable for legitimate surgery; yet on opening the cystic duct, removing this large stone, and establishing drainage, she was nursed back to health, making a perfect recovery, and is now at her home in Versailles, in this State, taking care of her children and discharging her domestic duties.

DR. CHARLES GREENE CUMSTON, of Boston.—I would like to report two cases, because I think it is difficult at times to make a correct diagnosis either of carcinoma of the liver or of gallstones.

The first case was a young girl 19 years of age. A year before I saw her she had a typical attack of gallstone colic. She was jaundiced; her stools were clay-colored; she had a furred tongue, anorexia, and other symptoms. She recovered from these symptoms temporarily. A year later she had a second attack, and her family physician asked me to see her. I did so. I found her in pain; she was having clay-colored stools, was very much jaundiced, and over the region of the gall bladder on palpation I felt a tumor the size of my fist, which came right up under the abdominal wall. It was glob-

ular, tense, and felt exactly like an enlarged gall bladder, one that might be filled with pus, although fluctuation was not distinct. I had never felt a gall bladder like it. Dr. Cheever saw the case in consultation with me and concurred in the diagnosis. She was treated until jaundice disappeared, which took about two weeks. No gallstones were found in the stools. I operated, made an incision through the peritoneum, and discovered a lump apparently up underneath it. I lifted up the peritoneum carefully, incised it, and found the gall bladder adherent all around. I separated it a little, but found it was nicely walled off from the general peritoneal cavity. I inserted an aspirating needle in several directions to the extent of five centimetres and found no gallstones. I broke down the adhesions, entered the general peritoneal cavity, and found what we took to be the gall bladder, with a carcinoma growing from the under surface of the liver, dipping down into the pelvis.

(A second case was detailed by Dr. Cumston.)

DR. EDWIN WALKER, of Evansville, Ind.—Two cases were recently sent to me for operation for gallstones, one of which proved to be gastroduodenitis, which was relieved by careful treatment. The other case, an amusing one, was brought to me by a physician who had had a controversy with the consulting physicians. A diagnosis of gallstones was made, and the physician told me he had collected six gallstones from the evacuations of the bowels. When the patient came to me I found that he had appendicitis, but I let the physician down easy by giving him the gallstones to take home with him.

In regard to suturing the ducts, I think the position taken by Dr. Vander Veer is correct. I am sure that I lost one patient by taking time to suture after removing a stone from the common duct. The patient was in a bad condition and the operation was prolonged considerably. Since that time I have drained with good success. In those cases where a stone is removed from the common duct, I have derived a good deal of benefit and comfort from a suggestion made by one of the Fellows of this Association, Dr. Robert T. Morris—namely, of making a gauze wick and surrounding it by rubber tissue. The advantage of this is that it drains well, does not adhere to the bowel, and does not give so much trouble.

DR. JAMES F. W. ROSS, of Toronto, Ont.—Since our last meeting I have had two cases which may be of interest to the Fellows. The subject of gall-bladder surgery is pretty well settled, so far as the ordinary surgery of removal of gallstones from the gall bladder is concerned; but the surgery of the ducts, however, is to my mind not altogether settled as yet. One of the cases occurred in a man supposed to have cirrhosis of the liver. I found below the edge of the liver a mass, and in dealing with it I thought we had an enlarged gall bladder and he was likely suffering from gallstones. The history of the case showed that he was kicked by a horse some years previously and was laid up for a considerable time. He re-

covered from that and regained his usual health for some time. Then his health failed, and he presented the appearance of a man with cirrhosis of the liver. I found at the lower margin of the liver a chronic abscess which contained cheesy, calcareous deposits. The question arose as to what was best to do. I did not care to drain the abscess into the peritoneal cavity, and did not feel warranted in stitching the tissues to the outer surface. As there happened to be in the gall bladder two or three small gallstones, I thought the best thing to do was to open the gall bladder, and through it I opened into the abscess cavity, squeezed out its contents, and drained the abscess cavity through the gall bladder, fastening the gall bladder to the wound. Much to my surprise the man recovered. I do not know why he should have regained his health after this operation, because the liver was damaged as a consequence of the chronic inflammation, and his condition was not likely to improve. (Dr. Ross then reported a second case.)

Regarding the removal of gallstones from the common duct, I have four patients walking about who have a new opening between the gall bladder and colon. Physiologists tell us that if we pour bile away from the duodenum into the colon the patients suffer untold ills. This is not so. Those patients are in perfect health.

I have performed cholecystenterostomy with the small Murphy button; in each case the button has passed and the patients have made perfect recoveries. The gallstones have been left *in situ*.

DR. A. GOLDSPOHN, of Chicago.—Touching the subject of unique cases for diagnosis, I recall a case I had about a year ago. The patient was a woman, 48 years of age, who had a painful tumor to the right of the umbilicus, and the area of dulness extended from the tumor to the liver. But, aside from that as a physical sign, it presented no symptoms of gallstones. She had never been jaundiced, nor had she had any attacks of colic. The mass was larger than I should think the gall bladder would ever become, and part of it seemed to be movable. The difficulty in diagnosis with me was, Is it an enlarged floating kidney that has possibly become adherent toward the median line, or is it an enlarged gall bladder? I could not decide between the two, so I thought I would make a less dangerous incision down over the floating kidney. This I did and found a floating kidney. I released it somewhat from the adhesions, brought it back, and anchored it in its approximately normal position; but while manipulating about the kidney I felt gallstones through the membranous tissues and quite a large gall bladder which lay between the kidney and the umbilicus. So, after stitching the kidney back I made an incision in the gall bladder, did the customary operation, removing in the neighborhood of one hundred gallstones. I made a careful search for more gallstones with sounds and forceps, and thought I had everything out, but in a few days

out came more stones the size of hazelnuts, and they continued to come. In the course of six weeks the wound was closed.

DR. J. HENRY CARSTENS, of Detroit.—Surgery of the gall tract is not simple. If we have stones in the common duct it is a serious operation to cut in and drain. If the stones are confined to the gall bladder the operation is not so serious. A good deal depends upon whether or not there is a septic condition of the gall bladder. Can we, by the condition of the patient, the pulse, the temperature, and the general history of the case, say that the gall bladder is or is not infected? If the gall bladder is not infected, if there are stones present and the bile contains no active germs, the operation is simple and the patient will recover ninety-nine times out of a hundred. If we have an abscess or some acute infection, the case is more serious to deal with, I do not care how you operate on it. In the present state of our knowledge I am not able, for one, to tell whether the gall bladder contains septic material or not. In carrying out the technique of these operations on the gall bladder, I am exceedingly careful to prevent contamination of the abdominal cavity from the gall bladder.

DR. W. E. B. DAVIS, of Birmingham, Ala.—It has been stated that a small amount of bile in the abdominal cavity is comparatively harmless, a large amount of it is exceedingly dangerous. In more than a hundred experiments on animals, in which I had opportunities of demonstrating this point, I found that animals with a great quantity of bile in their abdominal cavities would die in from twelve to forty-eight hours with symptoms very much like those of toxemia. It is a serious thing to have a large quantity of bile in the abdominal cavity, unless it is walled off, just as pus is sometimes walled off, and it is subsequently drained through the gall bladder. When the gall bladder is injured we have a serious condition to deal with.

In operations on the common duct too much stress cannot be laid down in favor of quick operations. The use of normal salt solution by hypodermoclysis is a great aid. Only a few weeks ago I prolonged a patient's life several days by the injection of three pints of normal salt solution. I am sure that were we to use normal salt solution in the extreme cases before operation, we would get better results in some instances.

I am glad to hear Dr. Vander Veer indorse drainage of the common duct without an attempt to stitch it up, in a large proportion of cases, because it is certainly rational and the proper way to treat these cases. If a prolonged operation is undertaken on cases in which there is profound cholemia, they will generally die. This operation of drainage of the common duct is becoming more and more popular. We should always use a glass drainage tube with the gauze, and should not be content to have the nurse draw off the fluid every hour, but should adopt the plan advocated by Dr. Joseph Price years ago in his drainage work, of having the tube watched and emptied

every ten or fifteen minutes at the beginning. In this way we avoid trouble. Drainage is not only applicable to cases of aseptic bile, but likewise to septic conditions, as has been demonstrated by a great many investigators.

DR. RICHARD DOUGLAS, of Nashville, Tenn.—I have had cases that have emphasized the point brought out by Dr. McMurtry of small gall bladders, and I have found them associated with a peculiar, anomalous condition of the liver in which there was uniform enlargement of that organ. In one case I could not bring the gall bladder in contact with the abdominal wall, and so I had to close the gall bladder; drainage infection occurred and the patient died. A postmortem examination was made, and a collection of fluid in the peritoneal pouch spoken of by Dr. Vander Veer was found. This pouch is decidedly to the right of the gall bladder.

The whole question of drainage in gall-bladder surgery after operations upon the gall ducts is similar to drainage in pelvic surgery. We long ago abandoned uphill drainage with glass drains, and if I had known of the method of drainage mentioned by Dr. Vander Veer I certainly believe I could have saved the patient I lost. It is a very important step in this department of surgery.

DR. RUFUS B. HALL, of Cincinnati, O.—We all recognize the fact that gall-bladder operations where there are no complications and the stones are confined in the gall bladder are comparatively simple operative procedures and the mortality is low. If all deaths could be correctly reported of operations upon the common duct, we would have a good many more deaths tabulated than we see now, in my judgment. I should say that the death rate of incising the common duct in all reported cases is something over 50 per cent; and I venture to say that if all of the operations made by experienced surgeons of incising the common duct for the removal of stones were placed on record, the mortality would be nearer 80 per cent. I take it that this high death rate is largely due to inefficient drainage. I know of no operation in surgery which is more desperate to me than the removal of a stone or stones from the common duct, taking one case with another.

I am favorably impressed with the method of drainage detailed by Dr. Vander Veer, and I shall certainly try it until I get a higher death rate than I have had by the other method.

DR. VANDER VEER (closing the discussion).—I feel grateful to the Fellows for their earnest and excellent discussions. I have learned a good deal in listening to their remarks. There are a number of cases on record of congenital absence of the gall bladder. I recall one case in particular which was precisely like the one narrated by Dr. McMurtry, where the patient suffered all the symptoms of gallstone trouble, but no gall bladder was found.

Mayo Robson has given us a short chapter on healthy bile

in the peritoneal cavity, and he reports a case in which he thinks over a pint of bile was taken care of by the peritoneum and no serious results followed. We do not mind a small amount of healthy bile in these cases.

There is no doubt that we get infection from the typhoid bacillus and the bacillus coli communis, and that these germs help to build up gall-stones, and that they in themselves infect the gall bladder, poison the peritoneum, and produce septic peritonitis. It is in such cases that I find it difficult to drain transperitoneally, as referred to by Dr. McMurtry so clearly, and when I cannot resort to that method of drainage I make use of the peritoneal pouch.

Second Day—Morning Session.

DR. CHARLES GREENE CUMSTON, of Boston, showed the photograph of

A CASE OF CARCINOMA OF THE CECUM,

and narrated the history of the case in detail.

DR. JAMES F. BALDWIN, of Columbus, O., read a paper entitled

DIAGNOSIS OF ECTOPIC PREGNANCY BEFORE RUPTURE, BASED ON ELEVEN CASES.¹

DR. CHARLES A. L. REED, of Cincinnati, O., read a paper entitled

A CONTRIBUTION TO THE SURGICAL TREATMENT OF UTERINE DISPLACEMENTS.²

DR. L. H. LAIDLEY, of St. Louis, Mo., read a paper entitled

FIBROMA OF THE OVARY.³

DR. JAMES F. BALDWIN, of Columbus, O.—I have had three cases of what appeared to me to be fibroma of the ovary, one a number of years ago. The tumor was three or four times the size of the specimen presented. It had a long pedicle; there were no signs of ovarian tissue microscopically nor evidences of malignancy. The woman has been in perfect health since. Its removal was easy.

DR. E. GUSTAV ZINKE, of Cincinnati, O.—A word or two in regard to fibroma of the broad ligament. In the past it was said that they originated from the uterus itself, and the pedicle was severed from it, and it became a tumor by itself of the broad ligament. This theory is now denied, because it has been demonstrated that the broad ligament contains an ample

¹ See original article, p. 605.

² See original article, p. 584.

³ See original article, p. 661.

amount of muscular and fibrous tissue, and the principal occurrence of fibromatous degeneration of the ovary may be explained by the fact that many of the tubules of the parovarium enter the ovary proper, that they extend into the ovary very extensively in many instances, and because of this fact the possibility of fibromatous degeneration of the ovary is explained.

DR. EDWARD J. ILL, of Newark, N. J., read a paper entitled

PAPILLOMA OF THE OVARY,¹

and exhibited specimens.

The remainder of this session was devoted to the further exhibition of pathological specimens, of which the operators gave brief histories.

DR. L. H. LAIDLEY, of St. Louis, Mo., showed a specimen of

HERNIA OR DIVERTICULUM OF THE CHORION.²

DR. RUFUS B. HALL reported

A CASE OF OVARIAN CYST COMPLICATED WITH MULTIPLE
UTERINE FIBROIDS.

DR. ORANGE G. PFAFF, of Indianapolis, showed

AN INVERTED UTERUS

which he had removed from an insane patient a week before.

THE PRESIDENT, DR. RUFUS B. HALL, delivered his address. He selected for his subject

THE EDUCATION OF THE LAITY UPON SEXUAL MATTERS:
WHEN SHALL THEY BE TAUGHT, AND TO WHAT EXTENT?³

Second Day—Afternoon Session.

DR. JOSEPH PRICE, of Philadelphia, Pa., opened the session with a paper entitled

PRIVATE HOSPITALS AND THEIR MANAGEMENT.⁴

DR. JAMES T. JELKS.—I am disappointed in the paper of Dr. Price. I wanted to get some idea of how to manage a private hospital, as I have one on my hands now. I want to know how to conduct such an institution; how to separate the matron and nurses, so that there will be no conflict backward and forward between them. I hope he will tell us, in his closing remarks, how to make money out of these hospitals.

¹ See original article, p. 654.

³ See original article, p. 577.

² See original article, p. 666.

⁴ See original article, p. 708.

We are prepared to give patients expert services, good attention, and to take care of them; but we cannot do this when there is a deficit on the ledger.

DR. L. H. DUNNING.—The paper contains many good points, but there are some features in it with which I cannot agree. The essayist has had experience with both general and private hospitals. So have I. I am connected with a general hospital now, so that you know where I stand. The expenses of a private hospital in caring for patients, etc., are much greater than in public hospitals, and unless a man takes the money out of his own pocket he has no means of support except that which comes from physicians. He must, therefore, charge a larger fee; he must charge more for nurses and exact a larger rent. Furthermore, such an institution excludes charitable patients entirely and takes the physician away from those patients. The reason why we ought to encourage public hospitals is because they bring us into closer relations and sympathy with the general practitioner; we receive more help from him and we give him more assistance. We take care of his poor patients along with the others, and we accomplish a greater amount of good by that means.

DR. JOHN B. DEEVER.—It is not my pleasure to run a private hospital, but I do the next thing to it. Dr. Price is correct in what he has said about nurses. One of the strongest points in the rapid and uninterrupted convalescence of a patient is the relay system of nursing, providing patients with day and night nurses. The success of Dr. Price is not altogether due to his manual dexterity, but to good, attentive nursing, and the fact that he is not embarrassed with a number of managers.

DR. EDWIN RICKETTS.—I have seen some things in a general hospital within the last few months that surprised me. I want to do for a charity patient the same as I would do for a private patient. In a charitable institution a patient was put under the anesthetic at 8:35 A.M., was scrubbed and scrubbed, and the operation did not begin until 9:07. This ought not to be tolerated. Four other patients were similarly treated. Those gentlemen do not do this with their private patients.

DR. W. E. B. DAVIS.—I fully indorse what Dr. Price has said as to the number of nurses. As a rule, private hospitals do not have enough nurses. A private hospital should have at least two nurses for every three surgical patients. With a smaller number the surgeon is hampered in his work.

DR. JAMES F. BALDWIN.—I have had a pretty fair experience with both general and private hospitals, but it has been a little different from that of Dr. Dunning, in that I have been practically the master of the private hospital. My patients are not neglected. If a nurse is not up to the proper standard she is dismissed. I do not have to go to the board of lady managers or superintendent for the purpose of investigating a nurse.

DR. EDWIN WALKER.—A good deal of the success of a private hospital depends largely upon the personal equation.

If a man has a temperament which is easily annoyed by details he had better keep out of private hospitals. My work has been more successful in a private than in a general or public hospital.

DR. RUFUS B. HALL.—I have conducted a private hospital for fourteen years and am not ready to quit it. In the management of a private hospital there are a hundred and one little odds and ends that must be looked after if we would hope to attain anything like success.

DR. J. HENRY CARSTENS.—There are disagreeable sides to private as well as public hospitals. There are troubles connected with them. There are general or public hospitals in this country which have sensible men on the boards of trustees. They are not political bums; they do not appoint ward heelers as superintendents, but men who are thoroughly competent to fill the positions. House physicians have to submit to a competitive examination before they are appointed. The management of some general hospitals is as good as we can expect.

DR. L. H. LAIDLEY.—We must not overlook the fact that Dr. Price will make a success of a private hospital where other surgeons would fail. Some surgeons cannot stand the irritation and petty annoyances incidental to the successful running of a private institution.

DR. A. VANDER VEER.—There is one point that has not been touched upon, and that is the management of hospitals from the governors' point of view, with a representation of members of the medical profession. In Albany we fought the matter of having physicians represented on the board of governors of public hospitals until we had a certain number of physicians associated with the board of governors, and now they keep in such close touch with the board that whenever a suggestion is made it comes directly from the medical staff and receives attention.

(Dr. Vander Veer then discussed the conduct and management of private hospitals at considerable length.)

DR. RICHARD DOUGLAS.—In the management of a private hospital, in the selection of nurses, we should always get women of intelligence and refinement, not women who cannot tell who their fathers or mothers were. We should never select nurses from the lower classes.

DR. F. W. MCRAE.—I have been connected with a public hospital for eight or ten years, and my work there has been as satisfactory in every particular as it has been in a private hospital. The hospital is supported by the city and governed indirectly by the city council. We have absolutely no trouble whatever.

Third Day—Morning Session.

DR. JAMES F. W. ROSS, of Toronto, Canada, read a paper entitled

POSTRECTAL OR PRESACRAL GROWTHS.¹

DR. RICHARD DOUGLAS, of Nashville, Tenn.—I have had no experience with the class of tumors the essayist dealt with, particularly those originating in the true pelvis. But I have met with two retroperitoneal tumors that are interesting and bear some relation to the subject under discussion. One patient presented herself with a tumor making the abdomen about the size of a full-term pregnancy. The symptoms and signs were those of an ordinary uterine fibroma. I made a diagnosis and opened the abdomen with a view to doing hysterectomy. I found the uterus, tubes, and ovaries perfectly free, pushed forward and entirely separate from the tumor. The rectum was to the extreme right side of the pelvis. I soon saw from the relations of the tumor that it lay behind the peritoneum, and the rapidity of the growth led me to think it was in all probability a sarcoma, so I did not attempt its removal. The abdomen was closed, the patient put to bed, and she made an operative recovery. Six weeks after that she developed ascites and died. I had an opportunity of making a post-mortem examination, which revealed a tumor distinctly encapsulated, and I could have removed it without the slightest difficulty during life. Microscopical examination showed it to be a myoma situated in the region of the psoas muscle.

DR. J. HENRY CARSTENS, of Detroit, read a paper entitled

THE LIGATURE, AND THE VALUE OF DRY STERILIZED CATGUT.²

DR. JOHN B. DEEVER.—The great objection to all forms of catgut is that they are not reliable, with all due respect to the essayist. That has been my experience. I like silk. I never use anything but silk in the abdominal cavity or in my goitre operations. I can truthfully and conscientiously say that I rarely see any bad results from it. I never think of using catgut, and I do not think I could be persuaded to use it.

DR. HALL.—Do you use silk in your hernia operations?

DR. DEEVER.—Yes. I have used kangaroo tendon, chromicized catgut, and silver wire. I have heard a great deal said against silver wire. The great objection to it is that surgeons do not bury it properly, by which I mean they do not turn the ends down. I use silk in my pus cases to tie off the tubes and infectious areas of that character, and I have not seen a suture fistula in the last two years.

DR. EDWIN RICKETTS.—We are coming back to what was taught by Mr. Tait—namely, dry ligatures. The drier they are the better the chance for success. I want to pay my respects to silk. In a Bassini operation silk will answer better for the reason that you can use a smaller size than it is possible to use when you employ catgut. I have seen Bassini operations in which the finest silk was used, and the results were beautiful.

¹ See original article, p. 629.

² See original article, p. 672.

DR. JAMES T. JELKS.—I have become dissatisfied with dry sterilized catgut; I have been more satisfied with formalin catgut, which you can prepare in a one to three per cent formalin solution. You can boil it as often as you please, and you know what kind of gut you are using. Repeated boiling does not injure its tensile strength. If it is boiled in a hot saturated solution of sulphate of ammonia you will have no trouble.

DR. CHARLES GREENE CUMSTON.—I have used dry sterilized gut during the last two years and have had no trouble from it. I do not use chromicized gut. In reference to silk, we ought to know what kind of silk we are using. I use the finest Lyons silk; it is very strong and pure. It is very stiff, but by boiling it can be made extremely flexible.

DR. FRANK F. SIMPSON, of Pittsburg, read a paper entitled
SOME CONTRAINDICATIONS TO THE INTRAPERITONEAL USE OF
NORMAL SALT SOLUTION AFTER ABDOMINAL SECTION.¹

DR. JOSEPH PRICE.—The essayist could not have brought a more important subject before us for consideration. These cases are numerous, and altogether they are the most trying, the most distressing, the most complicated class of patients we have to deal with. We have present a number of men who have contributed valuable articles on this subject, and sometimes they were subjects of recrimination. I have heard them abused roundly. Years ago I remember to have heard prominent teachers in this country denounce the men who would dare to report successful cases of general suppurative peritonitis. The reporters of such cases were declared to be untruthful. This contribution is one of the best we have had on this subject for some time along the line of drainage.

DR. J. HENRY CARSTENS.—In reference to drainage in the class of cases under discussion, when I think it is necessary I now drain by the vaginal route. I puncture the posterior cul-de-sac; I open all these spaces, and I am not afraid of them. I think that these spaces are no worse than the lymph spaces around the abdominal incision where the tube is, and I know we can drain very efficiently there.

DR. EDWIN WALKER.—I am gratified to hear this discussion, because at the Niagara Falls meeting of the Association I advocated this method—the absolutely dry method. For six years or more I have been wiping out the peritoneum dry, and the discussion corresponds entirely with my own experience.

DR. JOHN B. DEEVER, of Philadelphia, read a paper entitled

SIMPLE METHODS IN PELVIC SURGERY.²

DR. A. VANDER VEER.—I wish to indorse fully Dr. Deever's views in regard to the abdominal route. I have met with many cases of diseased tubes on the right side complicated with appendicitis, and this complication cannot be reached

¹ See original article, p. 694.

² See original article, p. 656.

through the vagina with any degree of satisfaction or comfort.

I disagree with Dr. Deaver in regard to the use of the angiotribe for the removal of the uterus. It is an instrument of value at the present time. I have used it in a number of cases, and Dr. Macdonald some forty-five times, without any embarrassment as regards hemorrhage, etc.

DR. L. H. DUNNING.—I cannot agree with the bold and sweeping statement that the abdominal route is better than the vaginal in every instance for suppurative pelvic disease. I have done vaginal incision over one hundred times for large pelvic abscesses during the acute stage, and have had but a single death from that operation, and have been compelled to do a secondary operation but twice. I challenge Dr. Price, Dr. Deaver, or any other man to show as long a list of severe cases with as few deaths.

DR. L. S. MCMURTRY.—I am sure that Dr. Deaver does not resort to the abdominal route in all cases, and that he would deal with some of the cases such as Dr. Dunning has mentioned through the vagina. Vaginal incision in acute cases, such as were described, is very satisfactory, but in the chronic cases it is unsatisfactory. The essayist laid down general principles to be applied, with reasonable exceptions in individual cases, and there cannot be any aphorisms made in surgery without that condition. The difference between surgery by the suprapubic route and surgery by the vaginal route is the difference between the work that you see, which has the advantage of precision and accuracy, and the work that you do almost blindly.

DR. JOSEPH PRICE.—If we take a hundred cases with large pelvic puriform collections and resort to vaginal incision, they will all improve; their tongues will become clean. But these cases are not cured. This is incomplete surgery. There will be a refilling of the sac in a short time. Dr. Dunning is right when he says that were he to do extensive enucleation in these cases the patients would die on the table. But he is not thorough with his patients. These patients have old, disorganized sacs, and he or some one else must eventually operate for the purpose of removing them. Such incomplete surgery has cost men their positions in good hospitals.

DR. J. HENRY CARSTENS.—With reference to the use of the angiotribe, I do not believe it is applicable for every case, but I think there are certain specific cases where it can be used to great advantage. I believe, too, that vaginal incision is a good thing, Dr. Price to the contrary notwithstanding.

DR. A. GOLDSPOHN.—Thorough work should be our foremost object, and if we can do this through the vagina, in the class of cases under discussion, it is our duty to do so, even though it is not quite as easy as operating from above. The idea of selecting the easiest route for the operator to accomplish a certain object, no matter whether it be the best route for the patient, is something I have no sympathy with. It does not

become a surgeon who is working for the greatest good of his patient. Any surgeon ought to be willing to sacrifice his convenience for the good of his patient. That many of the cases under discussion can be dealt with through the vagina I can abundantly vouch for.

DR. E. F. FISH, of Milwaukee, Wis., read a paper on
THE TREATMENT OF FIBROIDS IN THE NON-PREGNANT UTERUS.¹

Third Day—Afternoon Session.

DR. L. H. DUNNING, of Indianapolis, read a paper entitled
ACUTE SENILE ENDOMETRITIS.²

DR. EDWIN RICKETTS, of Cincinnati, O., read a paper entitled

TUBO-OVARIAN ABSCESS: HOW BEST TO DEAL WITH IT.³

DR. JAMES T. JELKS.—The majority of cases of pelvic abscess do not fall into the hands of eminent surgeons. The average practitioner can do better and more successful work by making a vaginal section in these cases, and then, two or three months later, if they are in good condition, they may be able to withstand abdominal section. The point I wish to make is that if we were all ideal surgeons, that if we were situated under ideal surroundings, that if our patients were all ideal and our hospitals ideal in which to operate, we could do ideal surgical work all the time. But this is not a fact. The bulk of this class of work is done out of ideal hospitals, hence I favor vaginal section and drainage in this class of cases.

DR. L. H. DUNNING, of Indianapolis.—It has been my privilege during the last ten years to have been connected with a large dispensary and a large public hospital, where I have had an opportunity of treating a large number of tubo-ovarian abscesses, and gradually there has grown up a method of procedure which I have followed invariably in the last two or three years in these cases, and I see no reason for changing it. If we have come to the hospital a case of abortion, in which the woman is suffering a great amount of pain, having a high fever coming on within ten days or two weeks, with the development of an abscess, we know we have streptococcus infection. It will not do in such a case to temporize, but we must resort to an active operative procedure to save life. In such a case, if we operate through the abdomen, we know that the mortality in the hands of everybody is great, notwithstanding the statements of some surgeons. Those cases can

¹ See original article p. 676.

² See original article, p. 648.

³ See original article, p. 659.

best be attacked from below. I have seen these cases repeatedly, and I know what I say is absolutely true. By operating from below we can relieve the acute symptoms, and in most instances put the patients in a condition to recover without further operative procedures. (Dr. Dunning referred to two other classes of cases that come to the hospital, in which the types of infection are different.)

DR. J. HENRY CARSTENS.—It is wrong to teach young practitioners that we should attack all these cases through the abdomen. One case may be suitable for the vaginal route and the other for the abdominal. Our method of procedure will depend a good deal upon the kind of microbic infection that is at the bottom of the trouble.

DR. E. GUSTAV ZINKE, of Cincinnati.—It is almost impossible to touch upon any point that has not been sufficiently elucidated by the previous speakers, and I rise for the purpose of adding my testimony in favor of vaginal section in some of these cases.

DR. LEWIS S. MCMURTRY.—There are two ways of accomplishing the same object in dealing with the treatment of pelvic suppurative inflammations—one by the vaginal, and the other by the abdominal route. By either route we strive to attain the same end, and it altogether depends upon the personal equation of the operator as to which route shall be selected. The personal preference of the operator will have a great deal to do in formulating his convictions upon the subject. A great many American operators who were fascinated with the vaginal operation when it was first introduced have since abandoned it.

DR. RUFUS B. HALL cited a case in which he opened an abscess per vaginam. He reported the case in detail, and said he believed that neither Drs. Deaver nor Price would have dared to deal with this abscess through the abdomen, considering the bad condition of the woman. The speaker did not promise that this operation would cure the woman, but informed her that it would be necessary some time later, as soon as her condition would justify it, to do a more radical operation.

DR. VANDER VEER.—Dr. Ricketts' paper is eminently in the right direction. I hope the Fellows do not understand that Dr. Price and Dr. Deaver would attack such cases as Dr. Dunning reported this morning through the abdomen. It is hardly doing justice to those men to entertain such an idea. I do not believe that Dr. Deaver or Dr. Price claims to do anything more than most of us would do in these cases. Many of these patients will come back to us for a more radical operation, although Dr. Dunning seems to have had great success in that his cases have remained well. We should give these patients to distinctly understand that we are simply going to make an incision and empty an abscess of its contents, and that very likely they will require a more radical operation when they are well enough to bear it.

DR. RICKETTS (closing the discussion).—An impression has gone abroad that we must always deal with these cases through the abdominal route. Such teaching has had a bad effect, and it is time that we should disseminate broadcast the idea that there is a conservative spirit in this Association; that these cases are not always dealt with either by the abdominal or the vaginal route, but that every case is a law unto itself; and that the surgeon must be the one who shall in each individual case say that this must be a primary operation of vaginal section and drainage, and when the patient is in good condition an abdominal section can be done later.

The following officers were elected for the ensuing year: *President*—Dr. W. E. B. Davis, Birmingham, Ala.; *Vice-Presidents*—Dr. Edwin Walker, Evansville, Ind., and Dr. A. Goldspohn, Chicago, Ill.; *Secretary*—Dr. William Warren Potter, Buffalo, N. Y., re-elected; *Treasurer*—Dr. X. O. Werder, Pittsburg, Pa., re-elected; *New Members of the Council*—Dr. Edward J. Ill, Newark, N. J., and Dr. Edwin Ricketts, Cincinnati, O.

Cleveland, O., was selected as the place for holding the next annual meeting; time, second Tuesday in September, 1901.

BRIEF OF CURRENT LITERATURE.

DISEASES OF CHILDREN.

Adenoid Vegetations.—J. P. Morton¹ believes in operation in every case, because: (1) Of all the well-known evil effects of mouth-breathing. 2. In 85 per cent of chronic suppurative otitis media cases in children adenoid vegetations are the cause, and are almost invariably the cause of temporary deafness in young cases. 3. The presence of adenoids renders children far more subject to all the infectious diseases, the germs of which gain admittance through the air passages. 4. The mucous membrane is kept in a chronic catarrhal condition and is liable in after years to the atrophic conditions. The sooner the operation is performed after the diagnosis the better. The author has a patient 6 months old in whom the operation was done after cleaning out the mastoid antrum. As adenoids often atrophy of themselves, some writers advocate giving them an opportunity to do so. But in the meantime the child is risking the infection of measles, diphtheria, and scarlet fever, is perhaps contracting middle-ear trouble, becoming stupid in appearance and mind, and is developing a chronic catarrhal condition in the nose and throat.

Cerebral Hernia, Case of Congenital.—Behm² reports the case of a well-nourished girl baby of good family history, born with an egg-shaped, pedunculated, non-pulsating tumor over

the occipital bone between the posterior fontanelle and the occipital protuberance. As the skin over the mass was excoriated and the size increased, the pedicle was tied off and the swelling removed on the eleventh day. The child's recovery was complete. Examination of the tumor proved it to be an encephalocystocele.

Chorea Minor.—Theodore Frölich³ reports 47 cases of this affection treated in the past seven years. The age of the patients ranges from 3 to 16 years; in 28 cases the disease commenced between 7 and 11 years. There were 39 girls and 8 boys. In 24 of the cases there was a rheumatic or psychical family history. Of the 47 patients 15 had suffered from acute rheumatism either before or during the course of the chorea. Of this number 11 had cardiac lesions and 8 had fever during their stay at the hospital. In 16 of the patients the chorea began with or was accompanied by febrile symptoms, with angina, articular affections, or erythema nodosum. The author considers these 16 cases to have been infectious in their nature. In 4 cases the chorea followed other infectious diseases—scarlatina, influenza, and epidemic muscular rheumatism.

Crises of Development, The.—Walter R. Jordan⁴ says that birth, dentition (or weaning), and puberty are like difficult passes from one tract of mountainous country to another. A minor crisis during the stage of childhood, dividing it into "early" and "late," is the seven-year-old period. While the whole developmental period, including intrauterine life, infancy, childhood, and adolescence, is a period of special danger when compared with the state of adult man, the dangers which threaten it are special, not so much in themselves as in their results. Practically all the influences which menace health in the adult, all the ordinary causes of disease, may menace it, too, before maturity is reached. But until then they have the special opportunity of being able by their incidence to delay, to stop, or to prevent development. And these effects may be upon the whole organism, the body generally, or upon separate systems or organs. It is these facts which make the study of disease in childhood a special branch in the theory of the disease, as considerations of convenience make it a special department in practice. Errors of diet, extremes of cold and heat, parasitic forms of life, and the rest, all attack the developing organism, and with the greater success that the resistive powers of the tissues are not perfected till maturity. But of all the systems of the body, that which most frequently comes to harm in the process of development is the nervous; and of all the causes of nervous disease, that which more particularly affects the immatured organism is the complex of unknown or little understood forces which we group under the name heredity. The effects of a bad heredity on the nervous system are seen during the whole period of development, but take special forms at different stages, and are particularly manifested at its marked crises. The trophic, motor, or sensory functions may be involved together or separately, and the

mental functions in every degree may be affected. Interference with proper trophic development is found in such congenital abnormalities as harelip, cleft palate, spina bifida, the deformed palate so often observed in neurotic and idiotic children, microcephaly, and congenital idiocy generally. A bad heredity of slightly less degree may show its effects at the first dentition or onward from then till the seven-year-old period. Motor convulsions, difficulty in acquiring the power of speech, occupation of the meninges by tubercle, night terrors, and some varieties of idiocy may serve as instances of hereditary taint sufficiently marked to act at this period of life. In the latter half of childhood, chorea, epilepsy, migraine, somnambulism, asthma are evidences of instability of nervous tissue resulting from a bad heredity. With puberty and adolescence are associated epilepsy and hysteria, Friedreich's disease, uncontrollable temper, and actual insanity. In this breakdown of the nervous system is seen the working of a bad heredity at the last moment to prevent the development of a sound nervous system capable of the exercise of the highest powers. But a bad heredity is not an inevitable source of disaster. While heredity is the most powerful factor in determining the course of development, it is but one of several factors whose product constitutes the total quantitative and qualitative impulsive force toward maturity. All other factors than heredity may perhaps be included in the general environment. Of changes of environment which may be used in the fight against heredity, two classes may perhaps be distinguished, general and special. The former includes general hygienic measures, maternal hygiene for intrauterine life, appropriate diet for the several later stages of development, clothing, access of sunlight, recreative exercise, regulation of the hours of sleep and of study. Special changes of environment are designed to meet the requirements of particular cases—the administration of drugs, the prescription of special local exercises, the ordering of complete rest for a part of the body will serve as illustrations. A sign of the times is the spread, among the more educated of the people, of child-study—the scientific observation of children. It is essential that the whole body of the medical profession shall be more than abreast of any scientific movement which concerns itself with the health of the community and is attracting the attention of the laity. Therefore the author suggests that the recent graduate, in those first months or years of comparative leisure which succeed the hanging-out of the brass plate upon the outer walls, should take up the subject of child-study. It would benefit the practitioner by throwing light on the after-effects of the specific and other diseases in childhood. It would give greater precision and force to his directions as to the general hygiene of the growing child, hours of work, play, and sleep. It would assist him in the special modification of these for particular cases. It would be a guiding influence of all therapeutic measures adopted in cases where development was

not proceeding normally. It would introduce some system into his estimation of the defects of backward children, would supply clues to the meaning of the behavior of precocious and unsatisfactory children. It would, where previous personal or family history supplied facts, justify him in making predictions as to the future mental and physical development of particular children, and thus give him opportunities of instituting preventive measures against developmental failure of body and mind. Child-study is obtaining a hold upon the public, possibly as a fad. For the medical man, who has to be a physiologist before he can heal the sick body, a psychologist before he can "minister to a mind diseased," the study is a necessity.

Dilettanteism in Medicine.—An editorial,⁵ taking for its text Dr. Jacobi's remarks on the tendency of the public at large to meddle with medicine, says: "There is an old saw, 'Every man who is his own lawyer has a fool for a client.' It might be read with equal truth, 'Every man who is his own doctor has a fool for a patient.' What makes the latter case even worse is that parents are tempted to practise not merely on themselves but on their helpless infants, with not infrequently some undesirable or even dangerous result. Even a clinical thermometer in the hands of mother or nurse in the nursery may make a vast deal of needless trouble for the physician and gratuitous woe for the baby. It should be the medical man's advice to his patients, particularly in his family practice, not to do as much, but to do as little as practicable 'before the doctor comes.' By this means, among the vulgar, the dog-bite will not be so often 'licked by the dog that did the biting,' nor eczema be treated with urine, nor abscesses poulticed with swine's dung (all of which are *actual remedies* among the classes mentioned); and among the cultivated we shall have fewer cases of collapse from headache powders, belladonna poisoning from 'rhinitis tablets,' chloral and morphine addictions, and urethral strictures. One wonders sometimes at the temerity with which a layman will deal with his own case of gonorrhea, or a mother trifle with trachoma in her child's eyes, when competent medical advice can be had for a small fee, or, if needful, for nothing."

Diphtheria.—William Ewart,⁶ discussing the question whether the period of infectiveness of this disease can be shortened and its tendency to spread diminished, says that if the spread of diphtheria occurs by direct transference of the bacillus from mouth to mouth, and that the great danger of its spread through schools arises from an occasional persistence of the bacillus for a long time after apparent recovery, our prospect of being eventually able to check its transmission ought to be merely a question of the efficiency of our methods of disinfection. In addition to the precautions usually carried out, we should thoroughly disinfect the nasal cavities and nasopharynx before children are allowed to return to school. The best methods of carrying this out, whether by spray, irriga-

tion, or other devices, is a question to be discussed by experts. Whatever the method selected, it should be applied early during the attack, and perseveringly and continuously during the period of convalescence, for the protection of the patient's future surroundings. At St. George's Hospital it has been the author's rule for all cases of diphtheria admitted to his care to receive local treatment for the nose and naso-pharynx by the introduction of carbolyzed oil twice daily throughout their stay in the hospital, with a view not only to relieve local discomfort or lesions and to obviate the spread of the latter, but also to insure, if possible, in all cases a gradual cleansing and disinfection of the entire mucous surface, by the spreading upward of the oil, which is dropped in with a camel's-hair brush with the head thrown back. If this or any other better system were generally adopted, it is not unlikely that the unfortunate occurrence of late relapses, or of infection by the apparently healthy convalescents, might be considerably reduced; and that instead of being prolonged in some cases, the period of isolation might be materially reduced in all.

Congenital Dislocation of the Hip.—E. Kirmisson⁷ thinks that, in spite of the very considerable progress made in the treatment of congenital dislocation of the hip joint, a complete solution of the problem has not as yet been found. Neither the bloodless reduction under narcosis nor the bloody operation is free from danger; from neither do we obtain constantly favorable results. Under the circumstances, treatment ought to begin as early as 18 months or 2 years. The displacement is usually slight at this age, and continuous extension will be all that is necessary to restore to the limb its normal length. Later the result obtained should be maintained by means of apparatus which includes the pelvis and the thigh and keeps the limb in a medium position of abduction. This treatment persisted in for several years will give a fair proportion of successful results. Should its application have been impossible or non-successful, bloodless reduction or the bloody operation can be resorted to.

Adolph Lorenz⁷ prefers the bloodless reduction of this deformity, as he considers that the operation is dangerous, that ensuing ankyloses and contractures demand a long and painful course of treatment, and that the pelvis may be injuriously affected in its development. Reduction under anesthesia is his preference. The operation begins by subcutaneous tearing of the adductor muscles by means of *pétrissage* of the muscles, which are stretched in forced abduction; then upon the femur, which is flexed to a right angle, vertical extension is exerted and abduction to nearly 90°, combined with direct pressure on the great trochanter. The success of the procedure is accompanied by unmistakable physical and clinical signs, and may be verified by the X-rays. Post-operative treatment has for its object the enlargement of the cotyloid cavity by means of pressure of the head of the femur; this is accomplished by fixation of the femur in an exaggerated position of abduction,

combined with hyperextension and slight inward rotation. Four or five months of this position are followed by four or five months of a medium position. During all this time the patient should stand or walk as much as possible. When the last plaster apparatus is removed, massage and gymnastic exercises of the gluteal muscles are applied. The results of this operation are very often successful, both structurally and as regards functions; but even when the anatomical condition is not perfect, functional powers are usually restored.

A. Hoffa⁷ says that the non-bloody methods should always be tried first, and if they do not succeed the bloody operation must be resorted to. In children from 3 to 8 years of age the operation to be chosen is the Hoffa-Lorenz method of replacing the head of the femur into a cavity of new formation. Septic infection of the wound is the chief danger of the operation—a danger which increases with the age of the patient—but strict asepsis will remove this obstacle. The wounds are not to be sutured. After treatment is of great importance, directed to strengthening the muscles by means of massage and gymnastics. Special precautions must be taken to avoid contractures in flexion-adduction position. Ankyloses follow only when there is suppuration of the wound and when the patient's age is too great. The unilateral operation should not be done after 10 years of age, the bilateral after 7 years. By the Hoffa-Lorenz operation it is possible to obtain a complete anatomical and functional cure of congenital luxation. The duration of the treatment is about four months. Growth of the pelvis will not be interfered with by the formation of a new cavity.

Epilepsy in Childhood.—Simon Ginsburg⁸ thus sums up his thesis: 1. Essential epilepsy is found in childhood, especially late childhood, more often than has heretofore been pointed out by the writers on the subject, who have apparently not sufficiently taken into consideration convulsions and petit mal. Up to the age of 2 years convulsions are a frequent manifestation of essential epilepsy. 2. Among predisposing causes anemia holds an important position. 3. Dentition is often the occasion for the development of essential epilepsy (trigeminal nerves). It may also be the result of the excitement of other nerves (pneumogastric, splanchnic, genital development, especially in young girls, fear, etc.). 4. In the treatment of essential epilepsy of childhood tonics are of importance. 5. Diet should be carefully watched. 6. The phosphate of lime should be given to assist dentition, while antispasmodics should be administered to subdue a nervous excitement which is central as well as peripheric.

Homatropin as a Cycloplegic.—E. C. Ellett⁹ says: 1. The necessity of cycloplegia in order to *accurately* test the refraction of young people is established, though *satisfactory* fitting can doubtless often be done without it. (Note the distinction between accurate and satisfactory.) 2. Atropin is, all things considered, the most reliable cycloplegic, but a great objection to its use is the length of time consumed. 3. For testing the

average case, without much chorio-retinal irritation or marked ciliary spasm, hom utropin, properly used, is sufficient. 4. The best method is that of the homatropin and cocaine discs made after the formula and used after the method of Dr. Casey Wood. 5. In many cases atropin must be used to relieve spasm, to procure rest, and thus to allay chorio-retinal irritation. In these cases the patient can no more justly object to its use than he can to its being used in iritis. In both cases his time and his business interests are secondary to the ultimate attainment of useful vision.

REFERENCES.

- ¹ Canada Pract., Aug. ² Münch. med. Wochens., vol. xlvii., No. 31.
³ Norsk. Mag. for Lægevidenskaben, Sept. ⁴ Birmingham Med. Rev., Sept ⁵ Ped., Aug. 15 ⁶ Edin. Med Journal, Sept. ⁷ Report of the XVI. International Med. Congress, Aug. 2-9. ⁸ Thèse de Montpellier, 1900.
⁹ Jour. Am. Med. Assoc., Sept. 15.

ITEM.

At the annual meeting of the NEW YORK OBSTETRICAL SOCIETY, held on Tuesday, October 9, 1900, the following officers were elected for the ensuing year: *President*—H. J. Boldt, M.D.; *First Vice-President*—Ralph Waldo, M.D.; *Second Vice-President*—H. N. Vineberg, M.D.; *Recording Secretary*—G. L. Brodhead, M.D.; *Assistant Recording Secretary*—G. G. Ward, Jr. M.D.; *Corresponding Secretary*—E. E. Tull, M.D.; *Treasurer*—J. Lee Morrill, M.D.; *Pathologist*—W. S. Stone, M.D.

ERRATUM.

IN Dr Knox's paper, on page 499 of the October JOURNAL, paragraph (b), the sentence beginning "In cases of hydroureter" should read: "In cases of hydroureter from this cause the conditions are ripe for the rapid spread of any infection which may be present in the urinary tract. Large tumors such as have produced ureteral compression in the instances cited usually exert more or less pressure upon the bladder. This is followed by a state of irritability, lowered resistance, and later usually by cystitis. The infective agent once introduced in the bladder may travel rapidly along the ureter whose function has been impaired, assisted doubtless by the contraction of the inflamed bladder walls. Once beyond the point of compression the upper ureter and kidney, distended by the urine, offer little resistance to the spread of the infection, and a most disastrous series of complications results, illustrated by the cases in Group D (c) (d) and (e) respectively. The same lowered resistance renders the kidneys more susceptible to inflammatory conditions of hematogenous origin. Other complications are of less frequent occurrence."

THE AMERICAN
JOURNAL OF OBSTETRICS
AND
DISEASES OF WOMEN AND CHILDREN.

VOL. XLII.

DECEMBER, 1900.

No. 6.

ORIGINAL COMMUNICATIONS.

THE PRESIDENT'S ADDRESS

BEFORE THE AMERICAN GYNECOLOGICAL SOCIETY, WASHINGTON, MAY, 1900.

BY

GEORGE J. ENGELMANN, M.D.,

Boston, Mass.

Part I.

THIS meeting marks an epoch in the history of the American Gynecological Society, founded twenty-five years ago, an expression of the growth and development of gynecological science in this country; the fourth in age of our special national organizations, it stands as the first, the oldest, of national gynecological associations the world over, an index of the progress and prominence of American gynecology; and yet it seems but yesterday that Fordyce Barker occupied this chair: I see them all—upon the platform the genial, gifted Barker, Atlee by his side, grand and calm, with Byford, thoughtful and serious, and Robert Barnes our English guest; on the benches Sims, Peaslee, Albert Smith, Goodell, Emmet, Lusk, Parvin, Wilson, and all the heroes whose names are graven indelibly on the tablets of Fame.

As I look about me the picture fades, the veil is rent; the ranks are thinned; but few of the old guard are with us now;

they are here no more, those earnest workers, those brilliant thinkers, who gave to American gynecology the proud pre-eminence it is our sacred heritage to uphold.

Yes, the picture fades: that yesterday was twenty-five years ago. Of the 39 founders of this Society, 12 only remain—12 of those 39 to answer the call of the roll to-day, a roll now of 92: and it is another generation, the men who are writing the gynecology of to-day, the men who will write the gynecology of the twentieth century, worthy successors to the pioneers who are no more.

I know well that time has fled when I realize that it is I who now stand on this platform where once stood Barker, stood Sims, stood Peaslee and all the great teachers who are no more, and Thomas and Emmet, the leaders who are still with us; that it is I to whom your generosity, your friendship has accorded the high honor of addressing you on this day, on this our twenty-fifth anniversary.

This year marks, too, an epoch in the history of gynecology, distinctly as it is marked by the century line on the great dial of Time; it marks the close of a century's quarter replete with progress and development.

In 1876 we stood on the threshold of modern gynecology, on the threshold of antiseptic surgery; and to-day we already see perfection within our grasp. In that brief span of time, with rapid strides, we have attained the pinnacle upon which we now stand.

Our science is one of recent growth and pertains distinctly to the nineteenth century. In the first decades it was hardly yet on a par with that taught in the days of Rome: the ovariectomy of McDowell, 1809, the vaginal hysterectomy of Sauter, 1822, the abdominal hysterectomy of Kimball and Burnham, were but as meteors in the dawn, and that dawn persisted until the genius of Sims brought light; then progress began, and if we survey the century we must realize "that in its first three-quarters progress was more than in ten such cycles before," as we are told in the able retrospect of our first president. The giant mind of Sims had opened the way and blazed the path; his speculum had given the surgeon the means of approach, his silver wire had taught the possibility of successful suturing; Emmet had begun his plastic work; Dunlap, Kimball, and Atlee kept alive the teaching of McDowell. A brilliant predecessor well characterizes this period when he pictures the field of science and practice, previous to the

advent of this Society, "as a calm with the unbroken aspect of the plain, with here and there only a towering peak such as the initiation of ovariectomy and of anesthesia, yet the distant rumbling of the coming upheaval already audible."

That upheaval came with the antiseptic era, and this last quarter of the century has been replete with growth and development, marked indeed by that periodicity which is characteristic of all life, pervading all nature, predominating in the physiological function of women and, as it would appear, in gynecological science as well.

We have passed through period after period—through the period of the pessary, of the intrauterine injection, of incision, of discission and suture of the cervix, of carbolic acid and chemical antiseptics, of normal ovariectomy, of salpingotomy, and of vaginal hysterectomy. The pelvic surgeon has merged into the abdominal surgeon and is solving the problems of appendectomy, of nephrectomy and nephrotomy, of intestinal and ureteral surgery, justly proud of the almost ideal status of hysterectomy.

The pioneer who led the surgical advance which was inaugurated and impelled by the labors of Pasteur was a Fellow of this Society, was Robert Battey, whose work and that of his contemporaries—Tait in England and Hegar in Germany—was the first great move toward modern abdominal surgery.

We then hardly dared look beyond the removal of cystic ovaries; no matter what the judgment of time may have been as to normal ovariectomy, Robert Battey led the advance onward; he taught us that organs could be removed with impunity, and from ovariectomy and salpingotomy the knife has successfully attacked every part within the abdominal cavity, until even the diaphragm no longer limits its progress.

Mortality has been reduced to a minimum; the death rate in simple abdominal cases—with rare exceptions the only ones ventured upon at the beginning of this quarter-century—then from 30 to 50 per cent, is now almost *nil*.

We seem to have attained the apex of surgical achievement, but there are peaks beyond, new fields to conquer; and what is true of the individual is true of the society, true of the science—we cannot with safety rest on past achievements; we must struggle onward.

There is important work yet to be done. Surgical technique has attained perfection almost, results are ideal as to extirpation and mortality, but how as to morbidity? Progress of

surgery and reduction of mortality have been considered too much, the woman and her morbidity too little.

Let us remember that morbidity differs widely from mortality; the saving of the patient, the uneventful recovery, is the first step only. The task before us now is that we reduce morbidity as we have mortality; now that we can with impunity remove organs, we must endeavor to preserve and to restore healthy functional activity. I can but quote one of our progressive surgeons, who well said that in the last twenty-five years we have come from the fear of handling the pelvis to the fear of not removing some part of its contents; from the dread of interference of any kind to the fearless taking out of any and every organ. We can now remove with a technique which lacks but little of perfection, and it behooves us to seek new paths of progress. Along the lines of extirpation we can no longer advance; we must look to preservation, to the conserving of the function, and this I believe to be the surgery of the twentieth century. Experiment must pave the way if progress is to continue, and though mistakes will at first be made, we must persevere.

I will not here pause, though well I might at this quarter-century mark, to review the Society's work. Twenty-four volumes replete with information now grace your shelves and realize, I can honestly say, the fond anticipation expressed twenty-five years ago in the opening sentences of the first presidential address, "*that the American Gynecological Society may exert a marked influence in stimulating inquiry, investigation, and observation, and that the volumes of our Transactions may fairly represent our national contributions to gynecology.*"

These twenty-four volumes are, in fact, an index of gynecological science during the past twenty-five years; the history of gynecology is there recorded, as it is recorded in the great text books of the Fellows, of Sims and Emmet, of Atlee and Peaslee, of Thomas, Mundé, Parvin, Byford, and Skene, of Reynolds, King, and Jewett, of Baldy and Coe, of Kelly and Penrose; as the gynecology of the present is recorded in the work of the Fellows and in the programme before us.

There are records, too, graven equally deep by Fellows of this Society who have left few traces of their pen—by men such as Gilman Kimball, a former president of this Society, ever to be remembered as the first surgeon on either side of the Atlantic who in 1853 deliberately, intentionally, and success-

fully performed hysterectomy for fibroid tumor of the uterus; men such as Alexander Dunlap and John L. Atlee, who bridged the gulf from the days of McDowell to the present; men of independent thought, skilful hand, and daring spirit, living in *country towns* without the indorsement of famous colleagues, of university or hospital, who believed in ovariectomy, and, believing, dared act at a time when the great surgeons of European centres, the great leaders and teachers of surgery, feared or condemned the operation.

Upon the work of the Society itself I must congratulate the Fellows; a glance at the twenty-four volumes of our Transactions tells of unflagging interest and persistent activity, of which the Society has reason to be proud. Beginning with a membership of 39, we now number 92, with a limit of 100. During these twenty-five years there has been an average attendance of 59 per cent, or three-fifths of the active Fellows, at each meeting; 35 per cent, or over one-third, presenting papers. In all 564 papers have been referred, of these 30 per cent upon obstetrical and 70 per cent upon gynecological subjects, revealing a satisfactory activity in obstetrical work, which has been stimulated markedly by the developments in axis-traction forceps, in Cesarean section and laparotomy in puerperal cases, in pelvic and abdominal effusion.

Suggestions, which it has been customary for the president to make, I have none; the Society is well and safely guided by an able council.

Let me urge only that this Society prepare for participation, officially and individually, in the next International Congress of Gynecology and Obstetrics, London, 1902, with Alexander R. Simpson, one of our Honorary Fellows, as president. The invitation to meet in the English metropolis, extended by our sister society of Great Britain, has been definitely accepted, and American gynecology should be properly represented in this first congress in our special field, under Anglo-Saxon auspices, in an English-speaking land.

THE AMERICAN GIRL OF TO-DAY.

The Influence of Modern Education on Functional Development.—It is my privilege to address you on a scientific subject, and it seems to me timely and appropriate to follow in the lines mapped out at the first meeting of this Society, in our President's prophetic address, twenty-five years ago.¹

These are now the lines of modern medicine, and must be the lines of modern gynecology; he urges a study of the commonest conditions which cause disorder and prevent a healthy performance of the female function, a study of etiology, pathology, and treatment. Not that he deprecates the importance of surgery, which even then, with a mortality of over 30 per cent, had given most striking results in the relief of suffering and preservation of life by the comparative perfection of ovariectomy, so attractive, so remunerative that it fascinates men and engrosses minds, until all talent is devoted to this branch of our profession, with the inevitable result that the study of etiology and of medical gynecology is left in the background and can boast of but little growth. He makes a plea for an equal activity in ascertaining the etiology and defining the more common symptoms of pelvic disease, and this I would now emphasize.

The trend of modern medicine is toward *prevention*, and this necessitates in the first place as a foundation the search for cause and conditions. Fortunately, prevention of many of the disorders to which women are subject by virtue of their functional organization is possible, but possible only after a careful study of the *conditions under which they arise*—conditions, as a rule, *which interfere with a healthy performance of the female function during the great waves of sexual life*.

The Waves of Functional Life.—Dangers. Puberty, menstruation, labor, and the menopause are the undulations which characterize the functional life of woman, a period in this country of thirty-two years, from 14 to 46.*

And these undulations are periods of highest physiological activity, periods of marked instability during which woman is most susceptible to influences mental and physical; these

* This is based upon the observation of Dr. Chadwick,² 99 cases in women of the laboring class: age of first menstruation, 14.316; of the menopause, 45.565, showing the period of functional life to be 31.85 years. Other American data I find none, but all foreign investigators agree that, other conditions being equal, the period of functional life is longer in the precocious; as Mayer³ says, "early menopause is in direct relation to late menstruation." I find the age of puberty among school and college girls in the United States, whom I shall here mainly consider, to be 13.8 years; hence for general purposes I have taken an average of 14 years—with the menopause correspondingly somewhat later than noted by Dr. Chadwick, at 46—the child-bearing period being 32 years, about that observed in the middle European countries.

are the danger points, and it is during these that injury is wrought.

Many a young life is battered and forever crippled in the breakers of puberty; if it cross these unharmed and is not dashed to pieces on the rock of childbirth, it may still ground on the ever-recurring shallows of menstruation, and, lastly, upon the final bar of the menopause ere protection is found in the unruffled waters of the harbor beyond the reach of sexual storms. It is for us now to chart the channel and plant the danger signals, that the ship may pass in safety.

During *the pubertal period* many receive the first blow; ere the girl is fully aware of the change which has taken place, or is warned by a mother of its coming and significance, she has needlessly exposed herself to injury, not serious perhaps, but often one which may sap her energies throughout life. It is here that preventive gynecology must make its beginning, and I shall in this paper present more fully the conditions which exist at puberty and those which accompany *menstruation*—the ever-recurring period of greater physiological activity and of susceptibility throughout the functional life of woman.

There is no question as to the sad and unnecessary sequences to *parturition*; we well know that large numbers owe their ill health to organs injured in the process of childbirth. One of the leaders in our art has said that at least 50 per cent of his patients are furnished him by the obstetrician (Coe⁴): though a positive percentage cannot be given, experience and case books testify to the frequency of labor as a cause of female suffering (Edgar⁵), and I may add that it is most frequently traceable to simple normal labor.

Mortality has been reduced to a minimum,* but morbidity is great. Even mortality is still greater than it need be in private practice; greater than it is in the huge lying-in hospitals. The consequent morbidity of simple normal labor is still far too high, and an ample field for preventive gynecology is presented in obstetrical practice, in the management of physiological pregnancy, labor, and childbed. This means surgical asepsis, a more careful study and closer attention to the management of healthy normal labor, which soon confronts the young physician in his practice and upon which he looks too lightly.

* For the last ten years, in the Clinique Baudelocque, the highest mortality was 0.42 per cent, and the lowest 0.15 per cent.

The *climacteric*, too, the last of the functional waves, is a danger period, known to the laity even as it is to the profession—a period of highest susceptibility, dangerous to the nervous organism rather than to the physical structures, with a liability to disturbances, in the main avoidable by precautionary measures, and which should be guarded against by proper management in the preceding years, especially by the correction of all irregularities of the reproductive function.

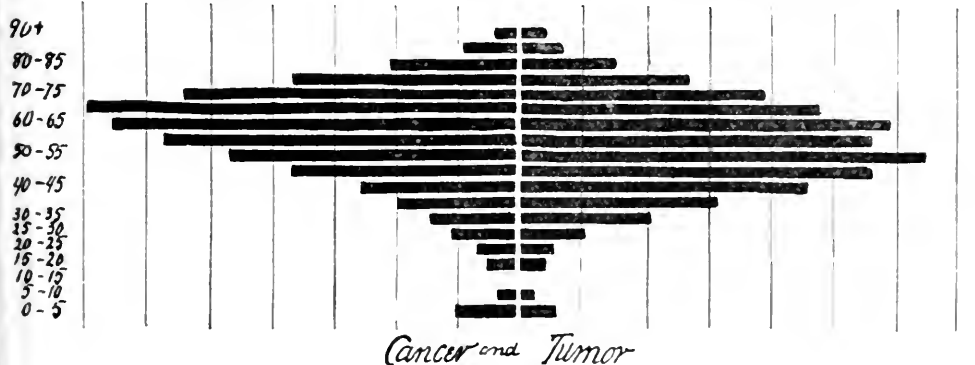
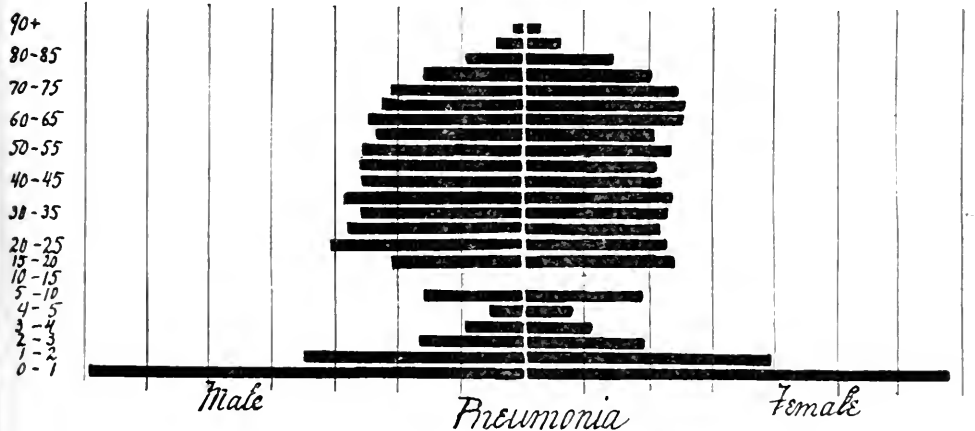
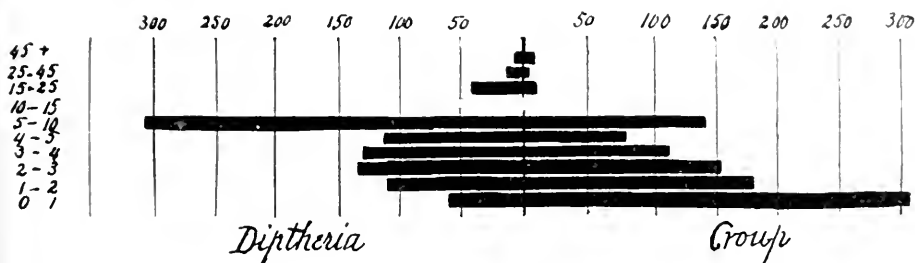
These are important epochs in the life of woman; but it is to the great waves of earlier life during the impressionable period of development that I would now direct your attention—to puberty and the formative period, during which this all-pervading function which controls woman's entire being is itself so readily moulded and controlled by surrounding conditions of all kinds.

Puberty itself, the establishment of functional life, is swayed by the most varied factors; race, climate, and many other conditions we know influence its advent, but equally, if not more, is it controlled by social surroundings and mental status.

I shall here note only the influence of mental development, as being, as far as my investigations in the United States show, the prominent factor and directly expressive of the relation of mental to functional activity, which is emphasized at a later period by the effect of mental application on the menstrual function as marked as the converse, the influence of the function on mentality.

The investigations of Mayer, De Boismont,⁸ Joulin,⁷ of Weber,⁶ of Radzewitch,⁹ and others have shown that the wealthy, the city-born, are more precocious than their poorer or their country-bred sisters; but my own investigations more especially indicate the influence of mental stimulus. Thus in my St. Louis dispensary practice I found the average age of first menstruation of American-born (2,315 cases), like that recorded by Dr. Emmet,¹⁰ to be 14.24 years; much the same as that found by Dr. Chadwick in Boston (2,503 cases), at 14.3; 697 of my own private cases, mainly from a consulting practice throughout the Southwestern States, smaller cities and country towns, representing the better classes, show 14.3 years as the time of development. The highest class among the working girls of Boston (800 cases) attains puberty at 14 years. Then we come to the high and normal school girl at 13.8 (1,342 cases), and in 2,060 college girls at 13.5. Neither birthplace

CHART I.



Mortality by Age and Sex.
 Lowest in Prepubertal Period
 from Eleventh Census of the United States, 1890.

CHART II.

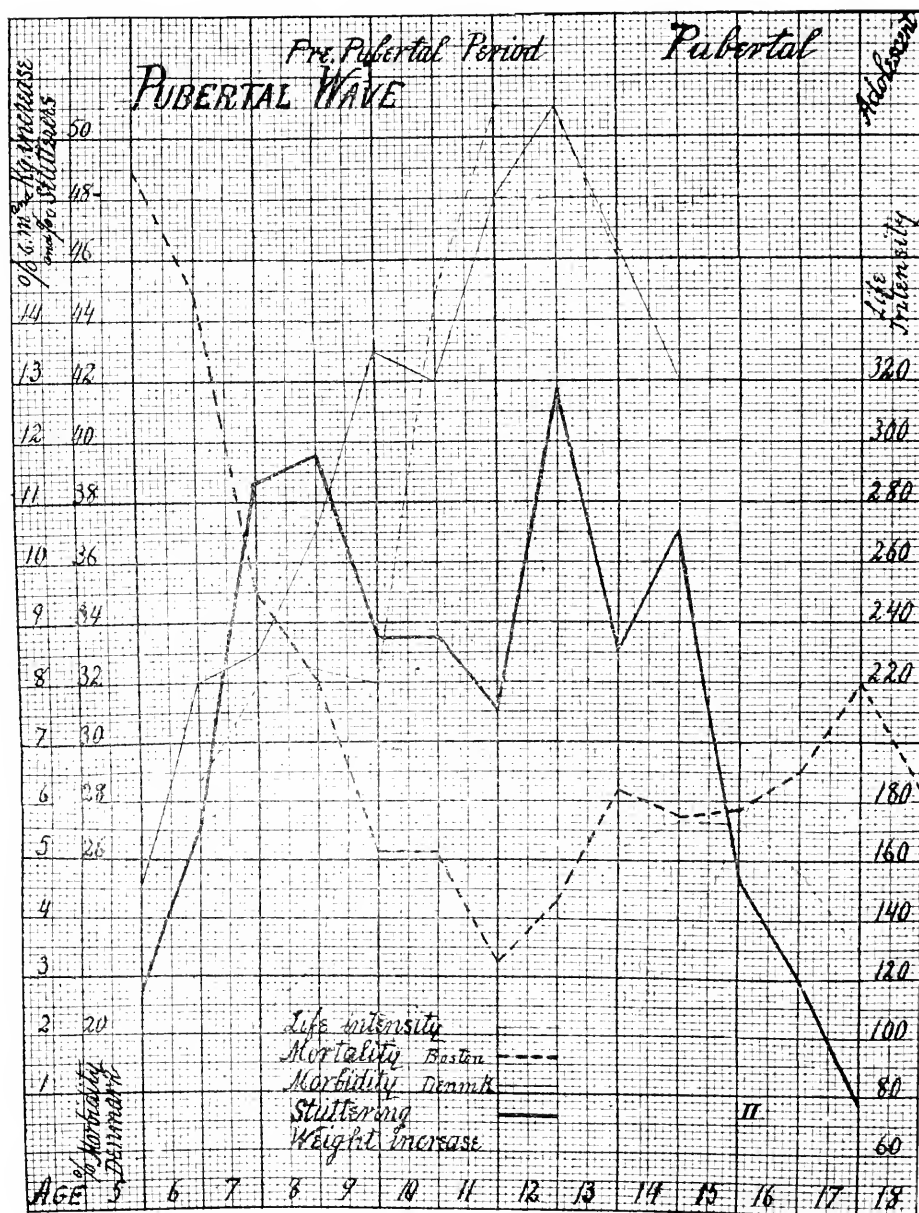


CHART III.

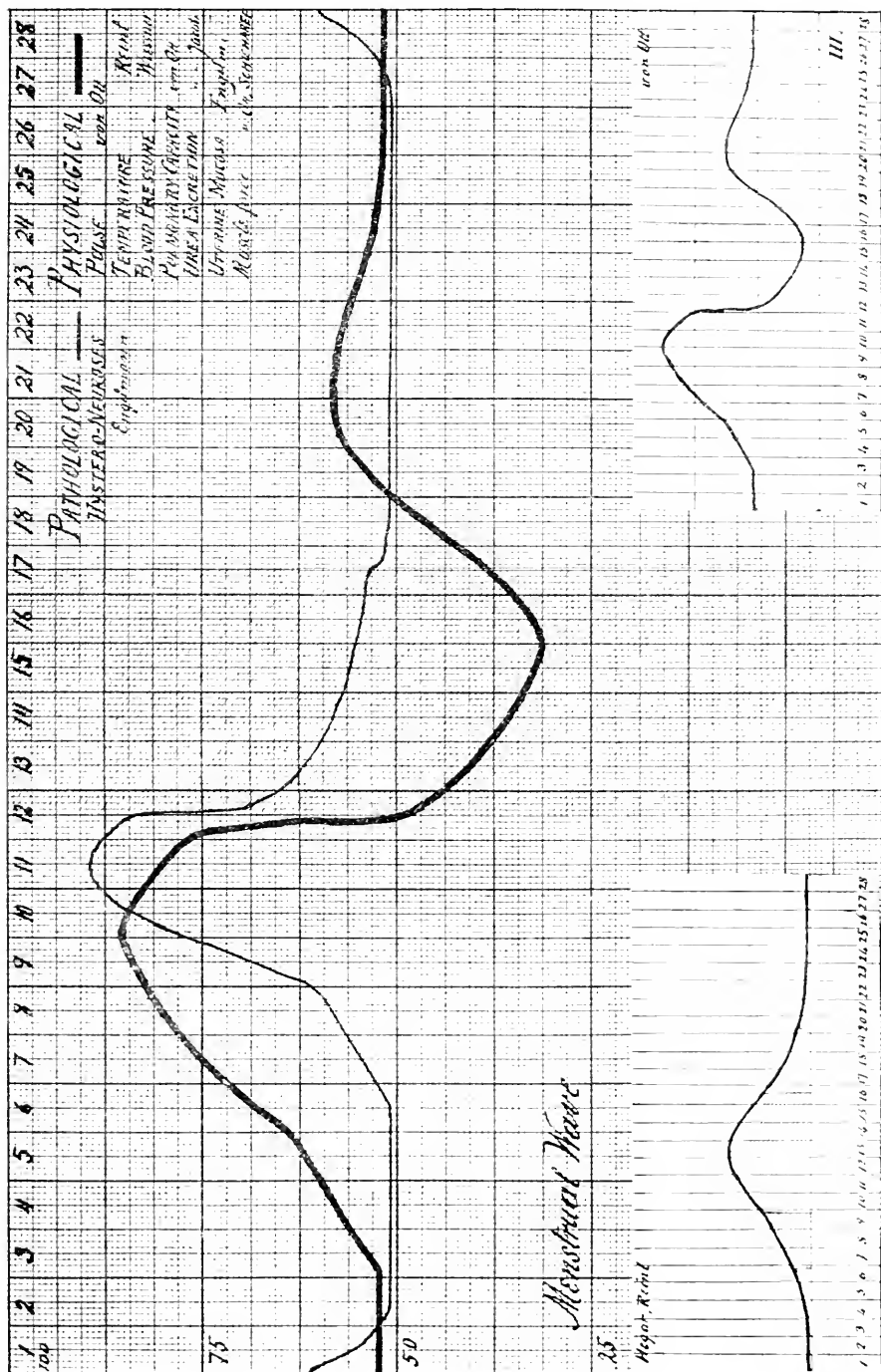
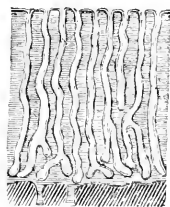
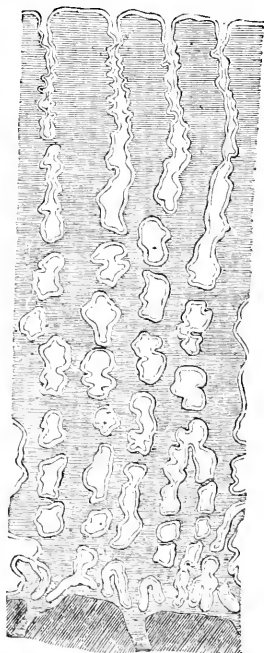


CHART IV.

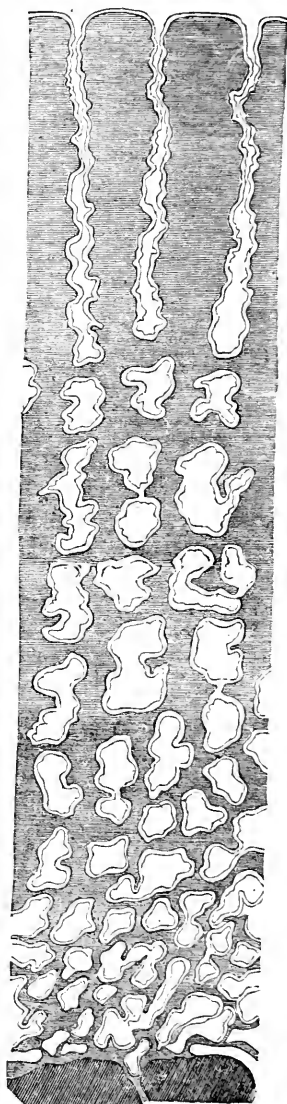
*Changes in the
Mucous Membrane of the Uterus
in Menstruation and Pregnancy
Magnif. 40 Diam.*



*Normal
Virginal
1.0 m. m.*



*Menstrual
Virginal
3.0-6.0 m. m.*



*Pregnant,
2nd to 3^d Week
4.0-10.0 m. m.*

IV.

*from Engelmann
The Mucous Membrane of the Uterus 1875
12-15 and 26*

CHART V.

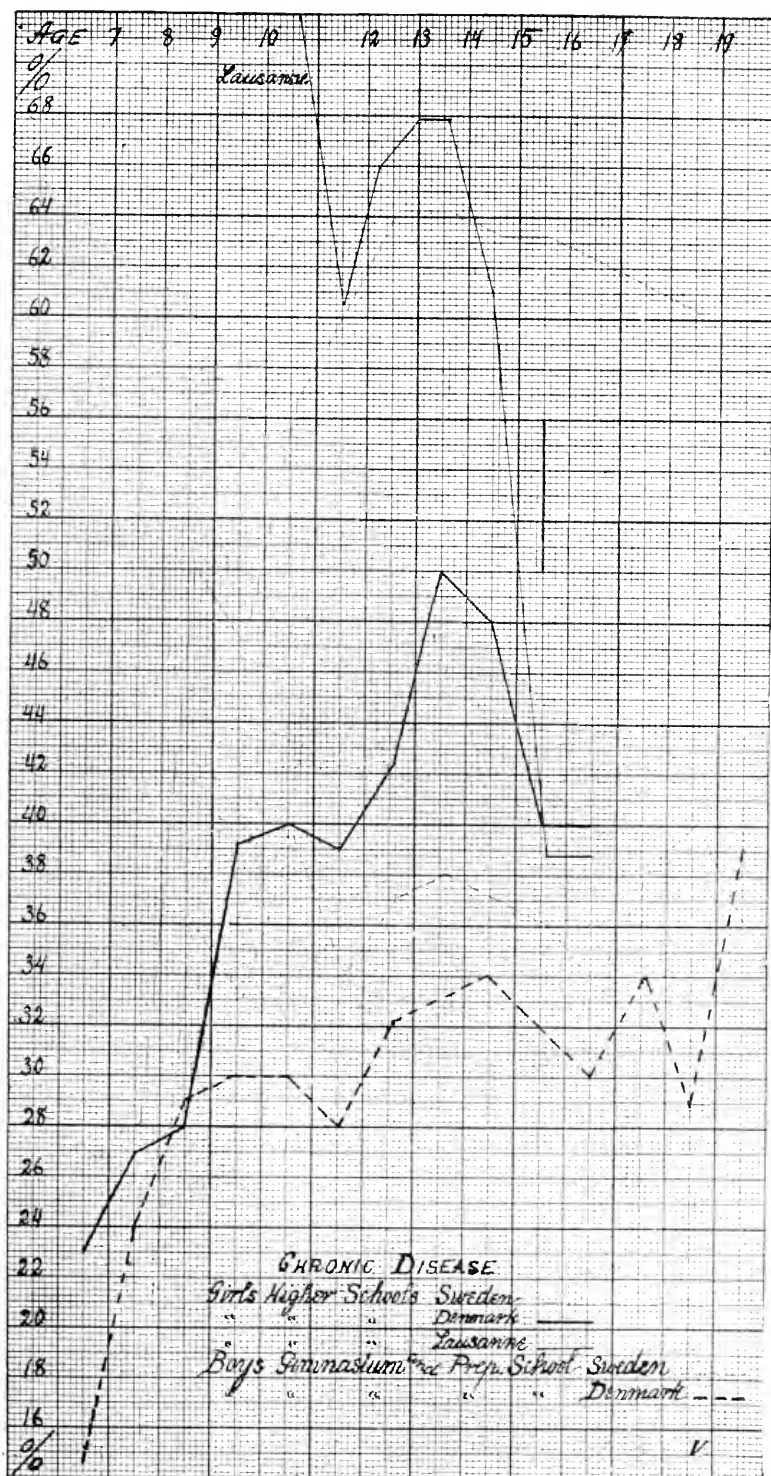
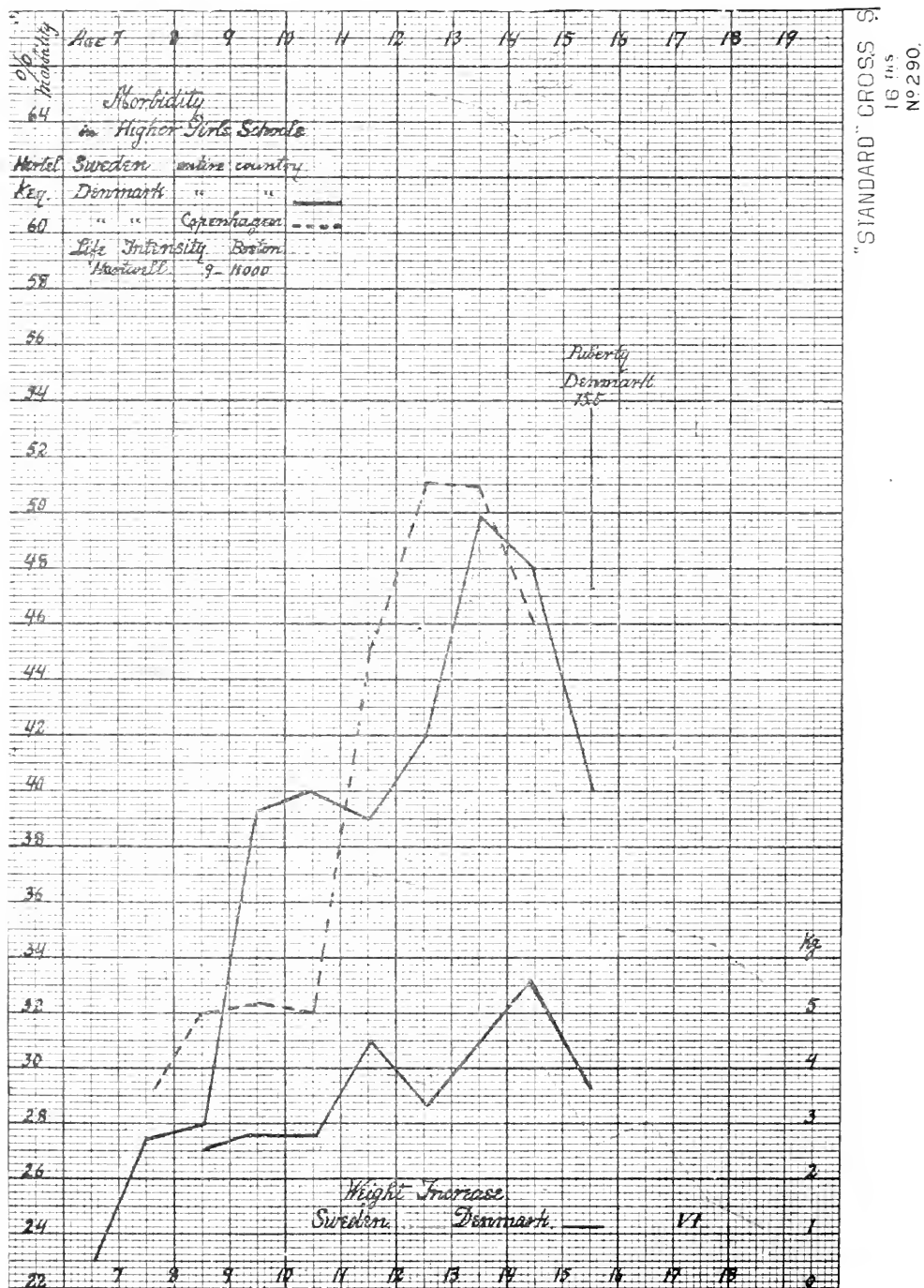
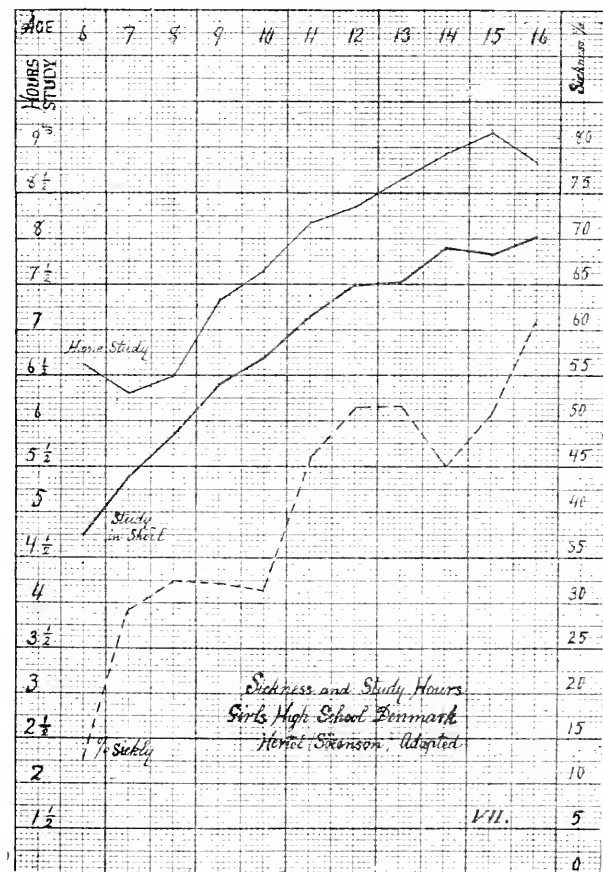


CHART VI.



nor parentage influences the development of the girl and the appearance of puberty as do the surroundings and mental stimulus of childhood and early youth, which give a variation of nearly one year, as noted in the 6,549 cases under my own observation. I desire to impress the susceptibility of the function to mental influences, and likewise the controlling influence

CHART VII.



of the function upon the anatomical, physiological, and pathological status of the growing girl.

Susceptibility to infectious and fatal disease in the pre-pubertal period is reduced to a minimum; mortality is at its lowest, as shown by the United States census (Chart I.); but this, unfortunately, gives quinquennial periods, and affords

only a general indication of conditions, as the years from 10 to 15 include with the prepubertal period more than one year before and after, both eras of higher mortality; but notwithstanding this the diminution is very apparent, particularly striking in the death rate from pneumonia, which begins to increase from the fifth to the tenth year, then drops from the tenth to the fifteenth, to rise at once to double this in the next five years. Chart II., representing the conditions during the pubertal period, is instructive, as the facts there shown have reference to one and the same class and conditions of children, school girls of Boston, perfectly well comparable, although not all from the same census years.

Physiological Fluctuations.—To show the correlation of conditions physiological and pathological, mental and physical, with functional development, I have charted mortality from the data of Hartwell, covering the census years 1875, 1885, and 1890; life intensity, the ratio of the number living to the number dying, expressive of vitality, from Hartwell¹² (census 1875, 1885, and 1890), and also the ratio of stutterers, expressive of nervous irritability (1893 and 1894); growth is represented by the annual percental increase in weight (Bowditch,¹¹ 1875), and the susceptibility to minor derangements, nervous and physical, by morbidity, for which I have been obliged to refer to transatlantic observations.

Morbidity has, unfortunately, never been investigated in our American schools. hence I have accepted and here introduce the data of Axel Key¹³ (after Hertel, Table XXVI.) from the Danish schools; adapting the curve to the conditions of the American school girl by giving it the same relation to the period of pubertal development in this country as it bears in the original to the time of first menstruation in Denmark, later by one and one-half years than in this country. Life intensity, strange to say, corresponds with morbidity, and both directly opposite to the lines of mortality. Where mortality is lowest morbidity and life intensity are highest, during the period of greatest physiological activity preceding the advent of the function.

All these conditions are clearly correlated and closely associated with, if not dependent upon, the development of the reproductive function, the activity of each at its highest in the prepubertal period, the apex reached some two years before the appearance of menstruation, and the lowest point with the

advent of the flow. This is true of life intensity, "which power to resist lethal influences is an expression of the nutritive activity of the organism during its period of greatest and most rapid growth" (Hartwell). Growth, here represented by percental increase in weight, also morbidity, follows almost the same lines even to the lesser rise between the eighth and ninth years; so does hysteria (Cloblatt¹⁴) and stuttering, an evidence of increased nerve excitability and susceptibility of the nervous system to motor disorders; all life intensity, strange to say, corresponding with morbidity as it does with stuttering, varies in a directly contrary sense to mortality, which is at its lowest ebb in the prepubertal period and increases with the advent of puberty; the same influence seems to control all, and the direct dependence of each and every one of these conditions upon functional development is demonstrated by the variation of its curve in direct relation to the variation in the time of first menstruation. In Denmark puberty is later by one year than in Sweden, and the period of greatest increase in weight is later by one year than it is in Sweden (Chart VI.). So is the period of highest morbidity later in Denmark than it is in Sweden. The period of highest morbidity in the higher girls' schools of the interior of Denmark (Hertel¹⁵) is later by one year than it is in Copenhagen (Chart VI.) because puberty is later by one year.

Puberty is by one year or a little over later in boys than it is in girls, and the age of greatest increase in weight is by one year later in Danish boys than it is in Danish girls; by one year later in boys in Sweden (Key), in Boston (Bowditch), and in St. Louis (Porter¹⁶) than it is in girls. Morbidity is likewise later by one year in boys than it is in girls in the same classes of schools both in Sweden and in Denmark; moreover, the changes are far greater in girls than in boys, the curves more marked, the apex higher in girls than in boys, as a rule, the pubertal changes are greater, more acute, the influence of functional development is more marked.

With the great wave of the pubertal period, covering years, we may well compare the menstrual wave (Chart III.), which barely covers as many days, but shows precisely similar conditions. Anatomical, physiological, and pathological facts clearly indicate these to be undulations similar in kind, varying only in degree, as I have always maintained since this truth was so deeply impressed upon me during the course of my

investigation of the uterine mucosa. Each menstrual period presents precisely the same characteristics—heightened activity before, a depression during the continuance of the flow, with a return to the normal soon after cessation, as first shown by Mary Putnam Jacobi¹⁷ and by Goodman.¹⁸ The curve pictured by Von Ott,¹⁹ of St. Petersburg, is so thoroughly in accord with my own observations with reference to the physical and psychical changes during the monthly period that I have reproduced it as characterizing the menstrual wave in all its phases. He thus records pulse, temperature, blood pressure, muscular force, and pulmonary capacity, and it is almost equally correct for morbid nervous symptoms as characterized by the hystero-neuroses, which I tabulated over twenty years ago. It is true, anatomically, as I have shown in the changes of the uterine mucosa (Chart IV.), and it is corroborated physiologically by more recent investigations of Schichareff,²⁰ Wiessner,²¹ and others upon pulse, temperature, and blood pressure. The activity of every function is intensified before the appearance of the flow, with the exception of nerve excitability, as shown by the tendon reflex (Von Ott), which reaches its height during the flow, as does radiating heat by reason of the diminished blood pressure. This I have demonstrated by a study of surface temperature in the axilla and on the abdomen, and Von Ott by the thermofeigoscope of Arnchem. The depression noted in the investigations, and so evident to the casual observer even, is well marked. Though apparent in every phase of physiological activity, it is not recognized in the curve of Hegar, Reinl,²² which I append for comparison (Chart III.).

During pregnancy and labor we have similar conditions; but this wave is one of longer duration and much greater intensity as to anatomical changes, blood pressure, pulse, temperature, and variations in blood corpuscles. The nervous symptoms, the perverted tastes, the nausea and vomiting of pregnancy are like the gastro-hystero-neuroses of the premenstrual period (Engelmann²³), as the hot flushes and the nervous excitability of the menopause correspond to those of the premenstrual and prepupal periods.

Hematopoiesis is increased during the flow (Hayem,²⁴ Duperie), so also the number of white corpuscles from one to two thousand in the millimetre (Reinert²⁴), with a relation of 1:247 during the flow and 1:405 in the intermenstrual period.

The number of red corpuscles is greatest just before the appearance of the flow, diminishing with its coming and again rising on the day after cessation (Reinert). As the constituents of the blood are affected by the menstrual wave, so is the circulation. Scientific investigation has shown the increase of blood pressure preceding the flow. Practically we recognize it by the increased swelling at a point of fracture, by the enlargement of the thyroid; moreover, there is a certain change in the character of the circulation, indicated but not as yet clearly defined, noted first by Jorissenne,²⁵ 1882, as occurring with such regularity during the early months of pregnancy as to constitute a reliable sign, and in 1885 observed by Louge²⁶ during menstruation, and that is the constancy of the pulse rate in different body positions. In man and in the non-pregnant, non-menstruating woman the pulse varies with a change of body position, being more rapid by ten to fifteen beats per minute in the perpendicular than it is in the horizontal position. During pregnancy and menstruation it has been claimed that such variation of pulse in lying and standing does not take place, but that the pulse remains constant as in cardiac hypertrophy (Graves).

While later research has failed to confirm this fact, the investigations of Fry,²⁷ 1882, and Stadler,²⁸ 1886, in the pregnant woman, demonstrate a condition of the circulatory system or its controlling nerves differing from the normal and identical with that found in my study of the variations of the pulse during menstruation—namely, that this variation in the normal from ten to fifteen beats is usually less, sometimes very slight, during the period of functional activity, but not often entirely absent, with constancy of pulse throughout all changes of position from horizontal to perpendicular. This, like other changes in the circulation, the slowing of the pulse, the diminution of pressure, can be accounted for only by a reflex nerve influence, by a predominating physiological wave, and not by the loss of blood in the menstrual flow, as even a copious venesection in eclampsia causes no decrease in pressure, and the menstrual wave has been observed recurring at the proper period, clearly marked, notwithstanding the removal of both ovaries and the absence of any flow of blood (Reinl).

The sensory organs likewise reflect the functional condition, the field of vision is contracted (Finkelstein,²⁹ Meyer³⁰), and,

by intensification of the functional wave in pathological conditions of the sexual organs, sight, hearing, and smell are interfered with. These facts, especially the marked physiological fluctuations of the pubertal and the menstrual period (Charts II. and III.), will suffice to demonstrate

1. The identity of these waves of woman's functional life, the identity of causes and results.

2. The disturbed equilibrium of the entire system during periods of functional activity.

Functional Health.—The subject is a difficult one for scientific investigation, but records of able observers have accumulated until there remains no doubt as to the influence of the function upon the entire economy; every organ and every system is more or less involved, and that physiological changes so varied in kind are not without marked influence upon the sensitive organism of youth is evident. How and to what extent it is influenced I shall here endeavor to show. I shall present the facts as found, the conditions now existing among the young women of our country during the period of development in the various phases of life, to determine the health of the American girl of to-day, as shown by its most potent and sensitive index—her functional activity—and how far this is influenced by the restless physical activity and mental stimulus of the age.

To obtain satisfactory results we must record, not individual observations or professional experience, which deals with pathological conditions alone, but we must obtain the facts as found among the representatives of American girlhood and young womanhood under the varying conditions of modern-day life, and this could be done only in institutions of learning and in large business organizations.

It seemed to me important that the girl in study and in work should be represented, from the advent of puberty through the period of adolescence until maturity, when a more stable, less impressionable condition is attained: from the fifteenth to the twenty-sixth year. This means high and normal school, college, and business house, as representing respectively mental and physical labor, and, between the two, the normal school for physical training approximating mental labor, and the training school for nurses nearing physical labor, the average age being in the high school, 16; in normal school and college, 19 to 20; in physical training, 22.6; the nurse 26, and the working girl from 15 to 30.

The importance of the subject and the practical bearing of the results obtained are perhaps more fully apparent when we realize not only how important but how large an element of our population is in question—374,487 young women in colleges and high schools, and over 1,000,000 of the same ages in the industries. According to the United States census of 1890, there are 32,751 young women in the colleges of this country, colleges for women, co-educational institutions, and colleges for men; there are 341,736 girls in the secondary educational institutions, 260,413 of these in the public high schools, and it is to these that attention must pre-eminently be directed, the largest number and the most dangerous period.

In the employments 3,914,571 women of all ages are noted in the census of 1890, and I estimate fully 1,000,000 of these to be under 20 years of age. None are recorded under 15, while the census of 1870 shows over 10 per cent—191,100—between 10 and 15 at work, the total number of women employed in the industries at that time being less than one-half of what it was twenty years later, in 1890. Many under 15 are undoubtedly now employed, and ages incorrectly stated; however, fully 1,000,000 must be under 20, in the formative period, and these demand consideration in this inquiry.

The difficulties of such an investigation seemed great, and the field was a new one. My inquiries were ignored by some; others sent vaguely encouraging replies or expressions of interest and appreciation of the importance of the work, with regrets at the total absence of any such data of the girls under their care. Some few progressive institutions responded most interestedly and aided by active co-operation.

While I had met with many failures, these failures in themselves have been most instructive.

I persisted, and my faith in the progressive spirit, the broad gauge, and the intelligence of the American woman, the American educator, has not been disappointed.

Officers of great institutions have made the inquiry, which was met in an intelligent spirit by the young women under their charge, and, where that for the moment was not possible, have directed a careful watch over the functional health of the girl for the future. It was gratifying to find that in schools and colleges, here and there throughout the country, these data had been secured for some years and the inquiry had been steadily pursued by enthusiastic workers of whom

we hear but little, yet who have of recent years become a most important factor in the educational problem, and have already done much for the development, for the functional, physical, and mental health of the American girl—these are the instructors in physical training.

Among them I have found interested, devoted workers, who are doing what the mother, the family physician, the educator, has failed to do—caring for the functional health of the girl. To them I owe the wealth of information, the data accumulated during years of laborious work or secured at my instigation. To them I owe the results I now present to you—important physiological data which hitherto have been overlooked or ignored.

Existing conditions. Nearly 5,000 of my records are available for a consideration of now existing conditions—all, with the exception of the nurse and a small proportion of working girls, from young women during the period of adolescence, with a history of previous conditions to early menstrual life and functional development.*

So much of interest appears that I can, in the brief space allowed, no more than indicate the more striking and significant of the many results which have developed in the study of the accumulated data.

Regularity and frequency of recurrence of the function are markedly controlled by psychical conditions and nerve influences. This is equally true of the accompanying pain, both direct and reflex. Less distinct is this influence upon duration and quantity, clearly existing, but with less regularity of result, responding freely in individual cases and to more pronounced mental changes.

The variations in frequency are along clearly marked lines, and, like other changes, most marked in the impressionable system of the young, as clearly shown in the records from educational institutions. The effect of mental strain and application is evident in increased frequency, while change of conditions and surroundings retards; both influences appear in schools. According to the existing conditions, sometimes one

* To be precise, 4,873; 4,161 individual records, and 712 of the same pupils taken a second time under different conditions, at the beginning of the junior and the end of the senior year, and additional value is given this by the fact that in the same institution both were always taken by the same observer.

is prominent, sometimes the other; sometimes they combine to produce results which are indistinct in their variations.

In the college the freshman year shows greater irregularity with marked infrequency. The experience to the girl is a new one—a complete change in her life and surroundings which influences the menstrual function as does the change in the emigrant, often leading to prolonged amenorrhea; this emotional phase overshadows the contrary effect of mental application, which, moreover, in the first year is slight, as studies are not pursued with too great vigor; later, with increase of mental work, the frequency of menstruation, to which it leads, begins to appear. In college and boarding school with change of surroundings we find a retarded flow and even amenorrhea. In the normal school, on the contrary, the condition is a very different one: no striking change of any kind has taken place; the girl, amid the same surroundings, as a rule, continues her home life, and the change from the high school is but that from one institution to another of very much the same kind. Her studies are serious, she is preparing for her life's work, and mentality is deeply involved.

Effects of these various conditions quickly appear, showing in the first months if the system is susceptible or the change great, and menses delayed in school or college resume the normal habit during vacation by relaxation and resumption of the accustomed home life. Even the short Christmas vacation often suffices to bring about a decided change.

Very strikingly are the conditions changed and menstruation retarded for the student midwife in foreign countries: coming from rural surroundings, with a mind untrained to study, all is new, and amenorrhea within one or two months the rule. This was found in 57 per cent of the 114 cases upon which Schrader based his investigation. So also in college this emotional retarding of the period develops speedily. Dr. M. A. Wood, who carefully observed the girls under her charge as instructor in physical training, writes me that it is surprising how quickly college life influences the menstrual function; that the effect in many already appears in the fall term (September to December) of the freshman year, though in others it develops later. More speedily even is the reaction to close application to study, and the cramming for examination with its concomitant excitement, which may result at once in a premature appearance of the flow, or is quickly followed by

greater frequency and irregularity of appearance. This is in part due to physical tire, which has this effect, as fatigue, frequently debility from illness, shorten the interval and increase pain and amount of flow. The mid-year examinations in the later years, when these tests assume importance, are followed by more or less functional derangement, and I am told by observing instructors that they are to be looked upon as more deleterious, perhaps, to functional health than any other one cause in college life. We observe in this respect the same variability which I have again and again noted in the menstrual function, and at times mental strain retards; but whether hastened or retarded, these changes are all accompanied by increased irregularity and pain. In school and college we find irregularity in over 50 per cent; but, regular or irregular, by far the greater number are retarded, that is, with an interval of more than twenty-eight days, and especially is this true of the freshman year: records taken at the beginning of this year, upon entering school or college, are of little value in determining the effect of the change as yet, but when taken at the end of the term become indicative, as we then see by Table I., the results more marked.

TABLE I.

Frequency of Recurrence.	During College.	Before College.
Under 28 days.....	15 per cent.	30. per cent.
28 " 	32 "	30.5 "
Over 28 " 	53 "	39.5 "

Table I. shows the change as recorded in one college, together with the percentage of frequency which may be assumed as a fair average. The intervals are greater, the recurrence of the period less frequent after the beginning of college life. In the normal school, as we have seen, we are more likely to observe a shortening of the interval. Expression of this we find in Table II. from a normal school where close application is exacted.

TABLE II.

	During Normal School life.	Before Normal School life.
Class with $1\frac{1}{2}$ hours gym.....	26.56	27.03
Class with 3 or more hours gym.....	28.43	29.

This table is moreover instructive as showing the influence

of physical training. The two divisions of this school of over 300 with the same studies differ as to the time given to exercise. Division I. has only two periods, or one and one-half hours a week, for physical training, and the result, together with hard study, is an average frequency of 26.56 days in place of the normal 28 days, or of the 27 days of these girls before entering the normal school. In the other class we see a similar effect modified by the compensatory action of physical training to which from four to six periods weekly are given. The longer original interval—29 days in this case—of girls more given to out-door exercises is reduced only to 28.43 by reason of their greater physical activity.

In some freshman classes the average is as high as 36.75. I have found none, even in a senior class, below 26.56, which is indicative of hard study. The general average in schools is nearer 29 days. Physical exercise regulates both frequency and duration, bringing about a healthy change with approximation to the normal, moderating frequency and amount if too great, and increasing it if menstruation is delayed.

Duration, as a rule, is lessened to some extent in the course of school life, the general average being 4.6 days, varying for different conditions from 4.4 to 5.5, with slight decrease from two-tenths to four-tenths of a day in time of duration, which may possibly be but one of the changes to be expected, as Emmet in his study of the subject (page 161) finds 4.66 days to be the average, beginning with 4.82 at puberty (2,080 cases); merely in those who are regular from the first, and these are not many, does no change take place. In most cases duration is shorter after some years than it was when menstruation was first established.

As in other records, my own data show less variety and difference of result than is evident in European observations; but comparisons are almost impossible, as records hitherto published are from laboring classes, or at least from women later in life and with functional disturbances. 3.6 days is the average for Norway, as cited by Vogt,³¹ with an interval of never over 28 days, always 28 or less. Faye³² gives 4.26 days, and Mayer, for Berlin, 20 per cent as the largest number at 7 days.

Regularity is difficult to determine, as standards differ; but whether we accord it more or less liberal limits, it is not the rule, and irregularity is frequent, increasing from 5 per cent

to 10 per cent in most of the higher institutions and in lines fairly parallel with pain and discomfort. In isolated cases only under the best hygienic conditions do we see the converse.

TABLE III.

Group.	Number.	Class.	Percentage of sufferers.	
			During school or college.	Before entering.
College	160	Freshman Higher classes	95 per ct.	90 per ct.
In business	800		83.3 "	71.5 "
College	50		74 "	69 "
Nurses	169		80 "	60 "
State Normal School	105		73 "	69.1 "
" " " "	100		81 "	70.5 "
Norm. Sch. of Gym.	98		77 "	76 "
Normal School, City	306		71.4 "	66 "
	1000		67.1 "	57.4 "
	125		64.7 "	58.2 "
College	223	{ Less hrs. gym. More hrs. gym.	66 "	
	45		60— "	60+ "
	103		57.84 "	
	103		57 "	67 "
Normal School, City	539	{ Junior	54.10 "	
		{ Senior	53.02 "	
High School	100	{ Junior	42 "	
		{ Senior	32 "	

OTHER RECORDS.

Author.	Locality.	No. of cases.	Class.	Per cent.	Notes.
Kennedy	Worcester	125	High.	78.4	
De Boismont	Paris	370		77	
Col. Alumnae Assoc. U. S.		705		66	53 per cent before; organic troubles increase from 24 per cent to 36 per cent.
Jacobi	Scattered	268		65	35 per cent; no pain.
Tuckermann	Cleveland	186	High.	46	Alumnae.
				62	Left school.
				57	Still in school.

Suffering during the menstrual period is more frequent than generally admitted, so much so that, like irregularities of the climacteric, it is erroneously looked upon as a necessary and unavoidable evil.

Table III. shows a percentage of suffering under different

mental and physical conditions. The numbers are high, owing to the fact that I have included moderate pain in this group, suffering of every degree and kind save the more trifling discomforts, suffering being classified as *severe—some, none*, severe and some here combined, and the result verified by a second question as to kind of suffering, languor, headache, or pain; some languor, and headache alone, usually about 15 per cent, is not here considered as suffering.

In this very brief and general consideration I cannot enter into details, but it may be well to note the fact that severe suffering exists in from 11 per cent to 18 per cent—*i.e.*, one-fifth to one-fourth of those experiencing discomfort during the period suffer severely. The very high percentage of suffering (95 per cent) in one of the higher institutions of learning is rather surprising, and can only be explained by the fact that all discomfort has here been considered; but the figures are correct, as this investigation was made with the utmost care by one of the medical officers of the institution.

As is to be expected, greater suffering is likewise found in the business woman, averaging in the class here considered 83 per cent, but this varies even in the same class of business, the department store, with the character of the work. The girl behind the counter, who is on her feet most of the day, with but little space for change of position, here classified as standing, shows 91 per cent; still those who sit—bookkeepers and stenographers—show 82 per cent; and those who have a certain freedom of motion—floor-walkers, cash girls, packers—are noted with only 78 per cent.

The pupils of the nurses' training schools 73 per cent, perhaps not quite just, as the numbers are as yet small and the records by far less perfect than those of any other class; but the results, such as they are, demand investigation, since we know that only women in perfect health are admitted.

That pupils in the normal school for physical training should appear with 71 per cent would seem inexplicable, as these are young women under the best possible conditions, with an apparently most favorable combination of mental and physical work. A better state of functional health is to be expected, and we should certainly find very different conditions were it not for the fact that girls already broken down frequently undertake this course for the purpose of restoring health wrecked in previous occupations; more frequently it is the teacher or the normal school girl. As a consequence they enter under most unfavorable conditions.

In school and college we find too large a proportion of sufferers—from 40 to 70 per cent—and I must call attention to a normal school in which one-half of the pupils devote but two forty-five-minute periods weekly to gymnastic exercises, while others allow four and more. Among those devoting more time to physical exercise we find 64 per cent of suffering as compared with 67 per cent in the other group. The lowest percentage is found in one of the normal schools and in a high school. Almost invariably the percentage of suffering is greater in the more exacting work or the study of more advanced classes than it was before in years of greater freedom; yet we find that from 65 to 70 per cent enter the higher institutions of learning—normal school, college—and business with menstrual suffering of some kind, and, as a rule, this suffering increases in the mental and physical occupations here considered, with some few exceptions, and these are educational institutions where marked attention is given to physical training. Thus we find in one of the normal schools 54 per cent in the junior and 53 per cent in the senior class, the first having entered with 66 per cent and the second with 71 per cent; but the most marked exception is in the very youngest class in one well-conducted high school with an admirable system of physical training, where we find the most pliable and impressionable condition—the menstrual function barely established, and the slight irregularities which may have arisen yielding readily to excellent surroundings and judicious management. Here we find 42 per cent in the junior class and only 32 per cent in the same girls at the close of their senior year, some eighteen months after the first record. We have seen an aggravation of suffering with advancing grade, as much as 10 per cent, and yet more in normal than in high, more in college than in high or preparatory school, and yet in school and college a certain number record their general health as better, and this is as it should be, owing to the often improved habits of life and greater regularity. It must be noted that while the percentage of suffering is greater, severe suffering, as a rule, grows less. In one institution 18 per cent suffered severely before, and only 10 per cent during or after, entering upon the course. This is especially marked in the pupils of physical training schools. In the working girl, however, severe suffering increases, most so in the girl behind the counter, who stands most of the day.

The percentage of suffering may appear high, but it is

nevertheless correct, as the figures are based upon large numbers and are moreover thoroughly confirmed by earlier records taken from other observers in other schools and even in other countries. De Boismont, in 1842, finds 77 per cent of suffering; Mary Putnam Jacobi, from her statistics of 268 cases taken from the different walks of life, finds 46 per cent who suffer more or less; 35 per cent with no pain—in other words, 65 per cent who might be classed in this group of those who suffer to some extent. Dr. Kennedy³³ found 78 per cent in a Worcester high school; Dr. Tuckermann,³⁴ from 46 to 62 per cent; but these are observations made under unfavorable conditions, and made on account of the apparent and general ill health of the pupils in those institutions. In fact, 62 per cent of suffering is among girls who had left school on account of ill health; those who continued are noted with 57 per cent. The college alumnae³⁵ by their records show 66 per cent with menstrual irregularities, as compared to 53 per cent during the earlier years of pubertal development, and state that organic trouble increased during college life from 24 to 36 per cent.

A certain confirmation of these figures is, moreover, found in the expression of the young women as to the increased difficulty of work, mental or physical, during the menstrual period, and by the number who are excused from their regular duties at those times. We find this expression precisely where we should naturally expect it, where study is harder and looked upon more seriously, her future concerned, in the normal school, in the school for physical training, and in certain colleges; 83 per cent in the senior class of one normal school find work harder, while only 69 per cent so express themselves in the junior classes. In one college, where the average age of students is greater, the girls older, more mature, 40 per cent only find work harder at that time. In the normal school repeatedly mentioned, the division with more hours of physical training responds with 52 per cent as contrasted with the other group with 60 per cent. The routine of daily duties during the menstrual period is clearly more trying to the girl at work, and it is again the one behind the counter, the one suffering most, who is most emphatic in expressing the increased difficulty of work during the period; 91 per cent of the saleswomen so state, and an important pointer is given by the fact that those with sedentary occupation give 82 per cent, and those in every way most favorably situated, who have the privilege of moving about, only 78 per cent.

The results are, moreover, verified by the numbers of those who are unable to fulfil their routine duties and seek *excuses from work or study* during the menstrual period. I must say that excuse from physical training, from gymnastics and sports for three days, and more if necessary, is customary in almost all institutions; moderate exercise is allowed, but in the gymnasium the girl is not permitted on the floor, and nowhere does she continue her class work in the gymnasium.

Excuse from study or examination is not customary, but always sought by some. I have made the inquiry as to the number who are *habitually* and those who are *occasionally excused*. I find that very few are excused at every period, yet in one normal school as high as 20 per cent and in one college 17 per cent, with respectively 40 and 14 per cent occasionally excused. But in the first instance I would base no general conclusion upon these figures, because they are derived from a very limited number (fifty, I believe); 30 per cent among all institutions may be considered a fair average of those occasionally excused from study, and the same percentage holds good for the working girl; 32 per cent of the saleswomen, or, rather, those behind the counter, must occasionally give up work, and 25 per cent of those moving about, 26 per cent of those sitting. Of the nurses, 14 per cent are occasionally excused from lecture and recitation, and 17 per cent from the physical duties of their work. When we find that the normal school girl, the nurse and working girl are forced to give up, we have evidence of considerable suffering.

Notwithstanding this high percentage of suffering, the increased strain of work, and the number excused, we find that the young woman is loath to give up her *amusements*, and that fully one-half, or 50 per cent, continue *pleasurable exercise*, no matter how severe, and dance, wheel, or skate regardless of the period. At least the responses indicate that they do not habitually or completely give it up, and answers come with remarkable unanimity from all groups and classes. It is very noticeable, however, that those who take life more seriously, and have already experienced the results of carelessness or neglect at that time, are those who avoid unnecessary exertion during the menstrual period—that is, nurses, physical trainers, and the older college girls.

Even *sports*, basket-ball, tennis, and other of the more active recreations, are followed by some. In one of the normal schools only 16 per cent admit this, but 32 per cent in

some of the colleges, and in one normal school as high as 60 per cent. The variations in these responses, however, are too great to admit of deductions of any value, and, moreover, I doubt whether the question as to sports, a term so elastic in all it implies, is fairly understood and understood in the same way; but it is evident that when a good opportunity for pleasure offers, hardly one-half of the young women are willing to deny themselves, and this, perhaps more than the strain of mental work, causes increase of suffering.

General health I cannot consider, because the question is too vague a one, and statistics do not exist in this country; but it is desirable to note the results of the very thorough Danish and Swedish investigations in regard to school girls, and I present them here (Chart V.) for the purpose of showing the relation of morbidity—that is, of the minor ailments—to functional development, which is well marked; the time of highest morbidity being invariably in direct relation to the time of first menstruation, and varying with all correlated physiological factors, as has been shown, earlier in Sweden than in Denmark, earlier in city than in country (compare schools of all Denmark with those of Copenhagen) (Chart VI.), earlier and more marked in the girl than in the boy (Charts V. and VI.).

Then, again, the relation of morbidity to hours of mental work is clearly shown in Chart VII., adapted from Hertel, by a combination of his charts. Functional disturbances are not here especially considered, but the influence of mentality, of nerve strain upon the general system, is clearly apparent from the parallelism of the lines of increase in morbidity with increase in hours of study.

Résumé.—Statistics have clearly shown the tremendous susceptibility and the almost feverish activity of the system in the prepubertal period, the period of developing womanhood; susceptibility indicated by heightened morbidity, nerve excitement by increase of stuttering and hysteria; heightened physiological activity by increased growth and resistance to disease, by lowered mortality; all gradually wane as the vital energies are claimed more and more by the reproductive function, and reach their lowest ebb with the advent of puberty, again rising after menstruation is established, and it is at this period of still unstable equilibrium that we find the school girl.

Similar conditions, less intense, recur before each menstrual period. Investigation has proved the increased pulse rate,

blood tension, and temperature, increased nerve excitability and muscular power, with a depression consequent upon the appearance of the flow, the system slowly regaining its normal tension with slight rise shortly after cessation; and these scientific facts are verified and emphasized by the status of young womanhood of to-day, which reflects the present conditions of life and indicates the susceptibility of the physiological function in the early years of puberty and during menstruation.

These conditions are not what they should be, as I have amply shown by records of large numbers, not from hospitals or the case books of physicians, but from educational institutions of the highest type and leading business houses—I might almost say from selected types, from those engaged in active pursuits and best fitted, mentally and physically, to cope with the problems of modern life.

The numbers and the intelligence of those examined are such that we must accept the data, and accept, too, the fact that unfavorable conditions, that suffering, irregularity, and impediment to work, are never thoroughly revealed; they are always likely to be below the true mark by reason of the inherent unwillingness of women to admit imperfections of this nature.

There can be no question as to the marked depression which follows the heightened activity of the system before puberty and before each menstrual period; observations of various kinds demonstrate this physical excitation and the subsequent relaxation during the first days of the flow and during the first year of puberty, covering the time of high and college preparatory schools. Intellectual vigor follows the same lines, and mental energy and acumen are, as a rule, diminished during the first days of the flow at least, as is affirmed by perhaps 65 per cent of the many questioned, who state that mental exertion, study, at that time is more difficult and wearing and requires greater effort, precisely as the working girl—only in a larger proportion of cases, 75 per cent—expresses impaired ability for work, saves herself, and relies upon her mates to complete some part of her task.

This mental depression is evident in the listlessness, indifference, and inability to master tasks easy at other times, noted by every observant educator as indicating the presence of the flow and the period of its first advent; similar conditions, less clearly defined, mark pubertal development in the boy. Over-

strain more readily occurs, the powers of attention and concentration are more quickly exhausted, and the brightest mind, the most sensitive, high-strung, nervous organization, is as a rule most responsive and most liable to impairment during the menstrual period.

Under normal conditions the physical changes which so deeply affect the female organism powerfully influence the mental equilibrium of woman. In the healthy and vigorous we frequently find the nervous system in a state of great excitability during menstruation, which does not, however, pass beyond psychical limits; but in the nervous system less strong this often develops symptoms which are pathological, and the connection between menstruation and mental status becomes pronounced.

I cannot here enter into the question of cause and effect; the correlation exists especially in certain forms of mental disease which are so frequently concomitant with amenorrhea. The examination of 705 cases by Schaeffer³⁷ shows interference with the function in 69 per cent of cases of melancholia, primary dementia, and acute paranoia, with total cessation in 40 per cent; while the forms of moral insanity and chronic paranoia show an irregularity of only 44 per cent, not more than might ordinarily be expected. In many cases the menstrual irregularity initiates the advent of mental disturbances. Insane impulses are certainly more marked at this time, the melancholic are more depressed, the maniacal more restless, hallucinations more intense, and impulses more uncontrollable. In short, control and endurance, mental and physical, are lessened at the period, even in the healthy, and Ellis³⁸ truly says that in any test of skill or strength everything must depend on woman's position in her monthly cycle. The difference of a few days will greatly affect the result.

Conditions of mental vigor I cannot here statistically prove, but we must admit, to say the least, an impairment of equilibrium, a condition of excitability and instability during the great waves of female life; and we must admit, too, that the condition of the American girl at the present day is not what it should be under the unusually favorable conditions of her life in what is justly hers by the splendid heritage of health to which she is entitled. Menstrual suffering we see in from 50 to 80 per cent—averaging, perhaps, 65 per cent: menstrual irregularity in from 45 to 55 per cent, and the period more generally retarded. Amenorrhea is frequent in the first year

of college or school, with removal from parental roof or previous surroundings; but this interference with the flow upon change of surroundings is but temporary, and must not be ascribed to study, to mental strain direct, but to the general influences of school or college life. I often see it among immigrants; it is an emotional amenorrhea, and described by the French as such, as the "amenorrhea of the pensionat," or the amenorrhea of the convent—"des religieuses"—and seems to be harmless if reasonable precautions are taken; without injurious effect if the girl is properly cared for, well fed, and not mentally or physically overstrained. This cessation of the flow is an effort of Nature to prevent waste and husband strength which has been successfully followed in practice in the management of debility and chloranemia (Löwenthal,⁵⁹ Gehrung⁶⁰). On the contrary, the amenorrhea due to violent emotion and to physical causes, to cold, has a most deleterious effect, resulting in mental and physical injury and often crippling for life.

Functional disturbances are least in the first years of pubertal development in the high school, increasing with each year, increasing in the normal school and college, increasing with intensity and seriousness of work; in one institution we see an aggravation from 69 per cent to 70 per cent in the freshman class, and to 80 per cent in the higher classes. This is not the effect of brain work alone, but of all the conditions, mental and physical, of school life, the resultant of concomitant circumstances, as is shown by the widely differing conditions in various institutions; but the dependence upon school life is distinctly characterized by increase of suffering, more frequent recurrence, from 18 to 25, and even as often as once in fourteen days, toward the latter part of the school year, with return to the normal in vacation, usually recurring with the resumption of fall work, but certainly with the tire which comes toward the close of the session in spring.

The younger the girl, the nearer the period of puberty, the more impressionable the system, the more susceptible to influence for good or evil, and most harm is wrought in the first year of functional life.

The majority of those who, after the high school period, enter upon physical work, date their suffering to the fourteenth year—that is, during their school life. One-half as many only are free from pain until their seventeenth year (this is the average), when the influence of steadily continued exertion is

marked upon the function. After this time little change takes place; it is evident that in later years, with the function well established, minor causes no longer disturb, and only more violent or constant exertion causes derangement.

The increased susceptibility to injury, mental and physical, during the menstrual period itself, is too well established by the observation of every practitioner to need verification here, and upon this I have sufficiently dwelt in my address on the health of the American girl.⁴⁰ Striking cases of functional disturbance from examination, hard study, and emotion at that time abound; but these I will not here dwell upon, as I confine myself to the statistical data presented.

That the aggravation of these conditions is to a great extent due to nerve influence is evident, ignoring my own observations, from the report of the Alumnae Association, 1885, noting an increase of functional derangement from 53 per cent in the earlier years to 66 per cent during college life, and, what is noticeable, diminishing to 64 per cent in after-years, notwithstanding the dangers of marriage, and work by a certain percentage dependent upon their own energies for support. Organic troubles are shown by the same authority to increase from 24 to 36 per cent, remaining at this point in after-life, and general health as deteriorating 19.6 per cent as compared with 16 per cent in the working girl (1,032 cases).*

This deterioration in health, general and functional, in the college girl is not the natural accompaniment of increasing years, as is proved by a comparison of her condition with that of the working girl. It is distinctly a sequence to college life, directly and indirectly, not due altogether to mental strain, but to the combined influence of habits of life and methods of training. This comparison is instructive, though unjust to the working girl, and I refer to it because it has been made to show that the influences of school and college life are no more deleterious to the peculiar organization of woman than those to be encountered in other occupations and even in the active pursuits of life. It is unjust, because the sole aim and object of the one is the development of all powers and faculties, guided by instructors whose duty it is to perfect this

* I regret much that a statistical investigation just made by the Associated Alumnae of American Colleges, and preparing for the Paris Exposition, is not yet in print and available for comparison, as indicating now existing conditions, although in this investigation no record is made of menstrual condition and functional health.

development and correct faults physical as well as mental. The other is engaged in the struggle for existence, and in the keen competition of the day must expect wounds, however the humanitarian may seek to guard her.

An able colleague¹² presents existing conditions rather forcibly and pointedly, but well, when he says "that the American horse receives on the average better treatment than the young woman of America from the time of early girlhood until the age of development has passed. The stock-breeder never forces the young animal during the period of development, realizing that it is the time the greatest care should be taken; while American parents, especially of the middle classes, with great ambition for their children and the desire that they develop intellectually beyond their own standard, allow their heads to be crammed with knowledge so rapidly that the brain cannot assimilate it, and the result is that all strength of development is devoted to the brain, and physique finds expansion as best it can—New England furnishing the extreme type of this woman, supposedly more perfect than in any other section, intellectually above the average, but with a physique below par, with greatly reduced reproductive powers, all due to the forcing of study at the age of development." The same observer adds that he finds the perfectly developed woman a rarity among teachers who have reached adult age—that is, among those who have been under the influence of present educational methods to their full extent.

Control and Prevention.—Betterment. That the unfavorable conditions of functional health which I have shown to exist are amenable to control and betterment, and, in fact, are now being bettered, is evident by a review of the statistical data here given, which at the same time indicate the method available for improvement.

The alumnae records of 1885 show a deterioration in functional health during college life of 13 per cent; my own of to-day, with the exception of one very small group, reveal much better conditions; the deterioration is slight, in one institution unchanged or with an improvement of 0.2 per cent, in another of 10 per cent, and this decided change for the better is due in the main, I believe, to the greater attention given to sports and physical training. The effects of gymnasium work are shown by improvement or lessened deterioration in the freshman year, to which, for the present, physical training as a compulsory study is limited, with the exception of one

institution in which this extends throughout the sophomore year, and with it the accompanying betterment of health; but by the end of the senior year the girls have slowly returned to about the same state of health at which they entered, which is not good, as I am told by the observing instructor in physical training, not merely as a vague general estimate, but the result of careful study and records throughout a number of years.

Functional and general health is likewise better, and capacity for study increased, in the small group of those who continue physical training as an elective study throughout the later years of college life.

These facts are corroborated by a comparison of the two groups of the normal school which show less suffering, greater regularity, and, I am informed, greater power of application in those devoting more time to gymnastic work. Equally instructive is the improvement in a normal school from 54 per cent at the beginning of the junior to 53 per cent in the middle of the senior year, a result accomplished amid most unfavorable surroundings and in the absence of proper facilities, by enthusiastic instructors, with attention to physical training in its broadest significance—attention to all that concerns the physical welfare of the girl. The possibilities of properly directed physical training are even more positively shown by the records of the high school, with an improvement of 10 per cent, from 43 per cent in the junior to 32 per cent in the senior year. All conditions in this school are more favorable, the girl is younger, the system more readily influenced, the building modern, light and airy, stairs few, with a roomy, well-ventilated hall for gymnastic work.

Attention is given to dress by the instructors in both institutions, and it is interesting to note that while in the former 47 per cent of the girls enter wearing corsets, these are given up, in consequence of advice and teachings of the instructors in physical training, for boneless waists, so that in the senior year we find only 30 per cent still retaining the corset. In the latter the results in this direction have been less satisfactory. The high school girl is younger and less inclined to yield this supposedly womanly privilege of wearing the corset, and while only 27 per cent enter with it, it is apparently assumed as an evidence of development, and is worn by 58 per cent in the senior year, regardless of the representations of an energetic and popular instructor.

These facts may suffice to indicate the lines to be followed and to show in how far, from the data here presented, improvement in the functional health of the American girl is possible, under present educational conditions; that this may be accomplished by greater attention to physical training, not gymnastic work alone, but physical training in its broadest sense, which should be compulsory throughout all school and college life, not only after functional development, but in the important formative, prepubertal period as well.

Physical training begun in early life, the habit of exercise, will do much to remove the susceptibility to injury during the physiological fluctuations of the functional wave, as we are taught by the acrobat, who, under constant training from childhood on, persists in her trying feats, requiring the greatest nerve and muscle strain and the highest co-ordination of all powers throughout every functional change, unaffected by the menstrual period.

Improvement is possible in the functional health of school and college girl, but more difficult are suggestions as to a feasible course for betterment of conditions in the working girl, as the laws of necessity, of supply and demand, too greatly overshadow all other claims. Prevention by self-knowledge, and a regard for woman's functional organization as far as the exigencies of business will permit, offer the only solution.

Prevention. Better far than the remedy of damage done and the relief of suffering already established is its *prevention*, and prevention is above all essential and possible in the impressionable, formative years of the pubertal period, the period of school life. The point of attack is clearly indicated by the identity of increase in morbidity with increase in hours of study ⁴³ (Chart VII.), and by the scientific facts and statistical data which indicate the instability and susceptibility of the system during the functional wave.

The *solution* is in reasonable hours of study, *in mental training adapted to physiological possibilities*, and a regard for the claims of woman's sensitive organization, for the reproductive function, and this we in this enlightened nineteenth century tend to undervalue and to ignore.

The girl pays the penalty and the community suffers.

We know nothing of that functional hygiene which was so fully appreciated by the nations of former ages and is to-day recognized by all primitive peoples to such an extent that it was made obligatory by laws of custom or religion, and the

highest penalty imposed for the transgression of these laws—transgressions which are thoughtlessly practised by the progressive and enlightened minds of our advanced civilization.

We hear of the vigor of the savage woman, of her capacity for work, her ability to follow the warrior on the march, and *why is this?*

It is because she is judiciously cared for during every period of functional life. and this care is given to woman by primitive peoples of every race, of every color, in every clime.* It is the teaching of intuition, the instinct of self-preservation, which recognizes the importance of the function, lost only among the very lowest tribes in whom the attributes of woman begin to disappear and even the frame approximates that of the male. These were the teachings of the great lawgivers—Moses and Zoroaster—and where religious law did not command, custom, equally potent, prevailed, enforcing rest and abstinence from labor and the daily routine work. So essential did rest seem, and, what is more, rest in the recumbent position, that among some peoples we find the hut for the menstruating woman so low that the upright position was impossible; she was obliged to lie down.

The advent of puberty was celebrated as an event of great importance in the life of the girl, and rest for some months was enforced, for a longer time by those who could afford it, among the more prominent and powerful, less among the more lowly and poor. The uncleanness taught by religious precept was the pretext, but rest was secured, as it was secured at each subsequent period. The isolated tepee for the menstruating woman is marked in the traces of almost every Indian village which remain, and among savage and semi-civilized people the world over this attention is given to the demands of woman's physiological function—a very different course from that pursued in our nineteenth-century civilization.

I have sought to present conditions as they exist: that they are not what we have a right to expect is apparent: the *cause* is, to a great extent, a misdirected refinement of civilization—*ignorance of and disregard of the function*, the crushing out of every question of sex in the girl, who soon learns to ignore, conceal, and deceive.

The *first step toward betterment* is knowledge—a know-

* Engelmann: "Labor among Primitive Peoples"; Ploss-Bertels: "Das Weib."

ledge of *woman's functional life*, its conditions and requirements; an understanding of its nature by physician, educator, and mother, by the girl herself, and to her it must come from the mother. This is due to a regard for the sensitiveness of the young girl and the mental suffering she undergoes when she is brought face to face with this epoch in her existence and at every period throughout her functional life; but she must know, and know in the right way, as has been well said, "that her mind may be freed from disturbing thoughts in this direction and from the morbid tendencies often resulting from half-knowledge, the prurient knowledge imparted by precocious playmates.

Upon the *mother* I would impress that perfect development of the female function, and maintenance of this function once developed in a healthy condition, is essential to perfect development of the girl and perfect health of the woman; that self-care, a well-regulated female hygiene, is the foundation of her well-being, and that it is the mother's first duty so to guard herself and so guard her daughter.

To the *educator* I would say that heed must be given the instability and susceptibility of the girl during the functional waves which permeate her entire being; that emotional stimulation must be avoided, and decided concessions must be made to the depression, physical and psychical, the lessened inhibition and physiological control during the fluctuations of puberty and menstruation.

Upon the *physician* I would urge care and guidance of the girl during the great waves of female life, those periods of increased susceptibility and of physiological intensification and depression; and such care is the first and essential step in preventive gynecology.

The data upon which this investigation is based have come from many sources, from every section of the country, representing various forms and grades of mental and physical work during the developmental period of puberty and adolescence. I have treated the subject from a purely scientific standpoint, classifying all pupils of like grade together, *recognizing no individual institution*, only similarity of conditions, and *mentioning no names*, as this might lead to invidious distinction and criticism, and being moreover especially requested not to do so by many to whose interest in all that bears upon the health of the girl I owe the facts which enable me to pre-

sent conditions as they exist, and which may tend to throw light upon the causes which produce them, the causes which interfere with the most perfect functional development.

I regret that I cannot here, by reason of this very request, convey my acknowledgments to all those to whom I am indebted for valuable contributions, but I do wish to express my appreciation to the presiding officers of institutions in every part of this country who have accorded me the privilege of utilizing the observations made among pupils under their jurisdiction, and above all to the directors and instructors in physical training whose work has already done so much to improve the physical condition of the American girl. Without their co-operation, generously and enthusiastically accorded, this investigation would have been limited to narrow fields indeed. I am indebted to them, too, for investigations made at my request, and, while I am not at liberty to mention names of those giving data bearing upon institutions with which they are now connected, I can at least express my recognition of the interest shown and the assistance accorded by Dr. Thomas D. Wood, professor of hygiene and organic training, Leland Stanford University; Dr. Eliza W. Mosher, dean of the Woman's Department, University of Michigan, who has done so much in the cause of woman's health; Miss Anne M. Barr, instructor and director of woman's gymnasium, University of Nebraska; Miss Lura W. Sanborn, formerly of the University of Wisconsin, now instructor in physical training in the Chicago schools; Dr. Alice Bertha Foster, of Oberlin, formerly of Bryn Mawr; and Dr. M. A. Wood, of Pittsfield, for facts and for statistical tabulations kindly done.

For courtesies extended I am indebted to the Hon. Henry Hitchcock, Secretary of the Interior; to Dr. Edward M. Hartwell, Secretary of the Bureau of Municipal Statistics of Boston, and late director in physical training in the public schools of that city; Dr. D. A. Sargent, director of the Hemenway Gymnasium of Harvard University; and Dr. J. W. Seaver, medical examiner and lecturer on personal hygiene, Yale University; to Mrs. Kate Gannett Wells, of the Massachusetts State Bureau of Education, an ever active worker in the interests of our public-school system; and to the active superintendents and chiefs of the nurses' training schools of our great medical centres; to the officers of our great libraries—Dr. Thomas Fletcher, of the Surgeon-General's Library, Washington; Dr. Edward Brigham, of the Boston Medical Library; and Dr.

L. K. Wilson, of Clark University, Worcester; and to many medical friends, especially to Dr. F. C. Ameiss, late clinical professor of gynecology, Missouri Medical College, St. Louis, my former first assistant, who has kindly collated my dispensary records as well as his own accumulated after my leaving St. Louis.

Broad-minded, progressive business men intent upon the welfare of their employees—Mr. Eben Jordan, Mr. John Shepard, of Boston, and Mr. John Wanamaker, of Philadelphia—heads of the great firms which bear their names, have enabled me to throw some light upon the conditions existing among the self-supporting, and whatever beneficial results may accrue from this investigation they are due to those who have made it a possibility.

LITERATURE.

1. BARKER, FORDYCE: Presidential Address. *Tr. Amer. Gynec. Soc.*, i., 1876.
2. CHADWICK, J. R.: Symposium on Health of American Women. *North American Review*, December, 1882, p. 517.
3. MAYER, LOUIS, Berlin: Menstruation in Germany. *Tr. Internat. Med. Cong.*, Paris, 1863, i., 206
4. COE, H. C.: Prophylaxis in Gynecology. *Med. News*, N. Y., February 3 1900.
5. EDGAR, J. CLIFTON: Prophylaxis in Obstetrics. *Med. News*, N. Y., February 3, 1900.
6. DE BOISMONT, BRIERRE: De la Menstruation. Paris, 1842.
7. Congrès Med. Internat. de Paris: Joulin, Paris, 1868, i., p. 178; Tilt, London, De l'influence du climat et de la race, i., p. 187; Faye, Christiania, De la menstr. en Norwege, i., p. 191; Norsk Magazin Laegeridens, 1856, iv.
8. WEBER, F.: Menstruation in St. Petersburg. *St. Petersburg. med. Wochenschrift*, 1883, viii., 329, 337, 345.
9. RADZEWITCH: Menstruation in St. Petersburg. *Tr. Internat. Med. Cong.*, Berlin, 1890, i.
10. EMMET: Principles and Practice of Gynecology, 1886.
11. BOWDITCH, H. P.: The Growth of Children. Twenty-second Annual Report of the State Board of Health, Mass., 1891.
- 11A. BOWDITCH, H. P.: The Growth of Children: a supplementary investigation. Boston, 1879.
12. HARTWELL, ED. M.: Report of the Director of Physical Training, School Document No. 8, Boston, 1894.
13. KEY, AXEL: (Translat. by Buergerstein Schulhygienische Untersuchungen, Leipzig, 1889)
- 13A. KEY, AXEL: Die Pubertäts Entwicklung. *Tr. Internat. Med. Cong.*, Berlin, 1890, p. 67.
14. CLOBLATT: Hysteria. Starr, American Text Book for Diseases of Children.

15. HERTEL, AXEL: Gesundheits-Zustand der Schülerinnen. Zeitschrift f. Schul-Gesundheitspflege, 1888, i., pp. 167, 174, 201.
16. PORTER, WM. T.: Growth in Height and Weight of School Children. Tr. St. Louis Academy of Sciences, vol. vi., No. 7, pp. 161-181; and vol. vi., No. 12.
17. JACOBI, MARY PUTNAM: The Question of Rest for Women during Menstruation. New York, 1877.
18. GOODMAN: The Clinical Theory of Menstruation. AMERICAN JOURNAL OF OBSTETRICS, 1878, p. 673.
19. VON OTT, St. Petersburg: Tr. Tenth Internat. Med. Cong., Berlin, 1890.
20. SCHICHAREFF: Pulse, Temperature, and Blood Pressure in Menstr. St. Petersburg, 1896.
21. WIESSNER: Centralbl. f. Gyn., November 4, 1899.
22. ENGELMANN: The Hystero-Neuroses. Tr. Amer. Gynec. Soc., 1878-1887.
23. HAYEM, GEORGES: Du sang et ses altérations anatomiques. Paris, 1889.
24. REINERT: Blutuntersuchung und Zählung. Leipzig, 1891.
25. JORISENNE: Ann. Soc. méd.-chir. de Liège, 1882, xxi. Also, 8vo, Paris, 1882, Reinwald & Cie.
26. LOUGE: De l'invariabilité de fréquence du pouls dans les différentes attitudes, pendant le période menstruelle. Gaz. des Hôp., Paris, 1885, 1172.
27. FRY, H. D.: Diagnostic Value in Pregnancy of Variation in Pulse due to Changes of Position. Med. Rec., N. Y., 1883, xxiii., p. 7.
28. STADLER, J. F. X.: Die Veränderungen des Pulses in der Schwangerschaft beim Liegen Sitzen Stehen. 8 München., 1886.
29. FINKELSTEIN: Salo Kohn, Uterus und Auge. Wiesbaden, 1890, p. 14.
30. MEYER, LEOPOLD: Der Menstruationsprocess. Stuttgart, 1890.
31. VOGT, Christiania, i., 196: Sur la menstr. en Norwege. Congrès Med. Internat., Paris, 1868.
32. FAYE: Menstruation in Norway. Tr. Internat. Med. Cong., Paris, 1868.
33. KENNEDY, HELEN P.: Effect of High School Work on Girls during Adolescence. Pedagogic Seminary, 1894-5, iii., p. 469.
34. TUCKERMANN, L. B.: Investigation with Regard to School Children. Phila. Med. and Surg. Reporter, January 14, 1882; Boston Med. and Surg. Journ., November 24, 1881, cv., p. 486.
35. REINL, CARL: Die Wellenbewegungen der Lebensprocesse des Weibs. Volkmann klin. Vorträge, June, 1884, No. 243.
36. Health of Women College Graduates. Rep. of Committee of Assoc. of Col. Alumnae, Boston, 1885.
37. SCHAEFFER: Einfluss der Psychose auf den Menstruationsvorgang. Allg. Zeitschrift f. Psychiatrie, Berlin, 1893-4, pp. 976-996.
38. ELLIS: Man and Woman. Scientific Series.
39. LÖWENTHAL: Die künstliche Unterdrückung des menstr. Blutflusses. Tagebl. d. Versamml. Deutscher Aerzte und Naturforscher, Strassburg, 1885, p. 110.

40. ENGELMANN: President's Address, The Health of the American Girl as Imperilled by the Social Conditions of the Day. Trans. Southern Surg and Gyn. Soc., 1890.

41. ENGELMANN: The Mucous Membrane of the Uterus. AMERICAN JOURNAL OF OBSTETRICS, May, 1875.

42. WYLIE, W. GILL: N. Y. World.

43. CHRISTOPHER, W. S.: Report on Child Study Investigation. Report of the Board of Education of Chicago, 1898-1899.

43A. CHRISTOPHER, W. S.: Measurements of Chicago School Children. Trans. Am. Pediatric Society, 1900.

44. SMITH, R. H.: Preventive Gynecology. AMERICAN JOURNAL OF OBSTETRICS, May, 1900.

45. ABBOTT, SAMUEL W.: Vital Statistics of Mass., 1897, Thirty-third Annual Report State Board of Health of Mass.

46. BURK, FREDERIC: Growth of Children in Height and Weight. Amer. Jour. Psychology, April, 1898.

47. CLOUSTEN: Neuroses of Development. Edinburgh Med. Journ., 1890.

48. GUILLARMOX, A.: Kinésithérapie gynécologique valeur hemostatique de certains mouvements musculaires contre les meno- et metrorrhagies. 4to. Paris, 1896.

49. HATFIELD, M. H.: Dynamics of School Puberty. Jour. Amer. Med. Assoc., November 25, 1899.

50. JOACHIM: Menstr. in Hungary. Ungar. Zeitschrift, 1854. Nos. 21-28.

51. KRIEGER: Menstr. in Germany. Die Menstruation, Berlin, 1869.

52. LAGNEAU, FILS: Paris: Recherches comparatives sur la menstruation. Congrès Med. Internat. de Paris, 1868, i., p. 170.

53. LEUDET, Rouen: Étude sur la menstruation. Cong. Med. Internat., Paris, 1868.

54. LIEVEN, St. Petersburg: Statistique de la menstr. de milles habitantes de St. Petersburg, i., 205.

55. GEHRUNG: Results of Repression of Menstruation. Tr. Amer. Gynecolog. Soc., 1889, p. 146.

56. MOLESCHOTT: Wiener med. Woch., 1854, viii., p. 113.

57. ROBERTER: Edinburgh Med. Jour., October, 1832.

58. SCHRADER: Beiträge zur Pathologie der Menstr. Leipzig, 1885.

59. WARNER, FRANCIS: Neural and Mental Disorders of Children. Keating's Cyclopedia of the Diseases of Children, p. 1304.

60. HARRIS, WILLIAM T.: Report of the U. S. Commissioner of Education, 1897-1898, Washington, 1900.

ACCESSORY ADRENAL BODY IN THE BROAD LIGAMENT. (ADRENAL OF MARCHAND,)¹

BY

ALDRED SCOTT WARTHIN, PH.D., M.D.,
Assistant Professor in Pathology in the University of Michigan, Ann Arbor, Mich.

(With two illustrations.)

THE report of the finding of an accessory adrenal body in the broad ligament is of importance because of the rarity of reported cases of this condition and also because of its practical interest to gynecologists.

Mrs. G. E., age 19, was admitted to Dr. Martin's clinic of gynecology in the University Hospital in March, 1900. Her family and previous history were negative. During the last year and a half the patient has complained of a progressive weakness, with pain in back, right side, and throughout the abdomen. She has had also a dragging sensation in pelvis and painful and frequent micturition. Menstruation has been profuse, but regular and without pain. There was an abundant white and thick leucorrheal discharge. On physical examination the abdomen was found to be sensitive, especially upon the right side. The right ovary was enlarged and very sensitive, and there was a slight ante flexion of the uterus. A diagnosis of cystic tumor of the right ovary was given, and laparotomy was performed on April 6. Both ovaries were found to be prolapsed, and in the right one there was a small cystoma. In the peritoneum about the fimbriae of both tubes there were a number of small pinhead tubercles. The tubes were thickened and tortuous.

In the left broad ligament, posteriorly, near its free edge, and behind the ovary near the plexus of veins, a small, pale-yellow, fat like body of the size of a pea was discovered. It was thought by the clinicians that this little body might be a larger tubercle, but its appearance and its location (subserous) were so unusual as to attract attention, and it was removed

¹ From the Pathological Laboratory of the University of Michigan, Ann Arbor.

separately for special examination. It was fixed in mercuric chloride and embedded in paraffin. Portions of the ovaries, tubes, and the small peritoneal tubercles were also fixed and embedded in the same manner, and sections stained in hematoxylin and eosin. On examination these showed a miliary tuberculosis of peritoneum and of both tubes, chronic ovaritis, and adenocystoma of the right ovary. The examination of curettings from the uterus was negative.

The microscopical examination of the small body from the broad ligament was made from sections cut at a right angle to the serous surface. These were stained in hematoxylin and eosin. The serosa of the ligament is found to pass in a thin layer over the growth, which has its own capsule of connective tissue completely surrounding it and separating it from the connective tissue proper of the ligament. From this capsule delicate trabeculae of connective tissue pass into the substance of the body, giving it an alveolar arrangement. The alveoli



FIG. 1.—Adrenal body from broad ligament. Drawn by aid of projection apparatus. Six times natural size.

are filled with epithelial-like cells lying in close proximity without spaces between them. In sections cut through the central portion of the body the alveoli at the periphery are found to have a radiating arrangement, the cells lying in radiating strands which are separated from each other by the delicate trabeculae. This radiating zone has a breadth of about one-tenth of the entire diameter of the growth. In the central portion the alveoli are irregular in size and shape, the trabeculae running in a net-like manner, resembling somewhat the arrangement of the lung alveoli.

In the peripheral radiating strands the cells lie in rows of two to four. They are for the greater part round or polygonal in shape, 10 to 12 μ in diameter, but so closely pressed together that the cell boundaries are not always distinctly evident. No intercellular substance can be made out. Near the radiating capillaries of the peripheral zone the cells are more cubical or short columnar in shape, 8 to 16 μ in length, and 4 to 8 μ in

breadth. In the central area they are almost entirely polygonal, but are very irregular in shape and much larger, having a diameter of 8 to 24μ , though occasionally cells 30 to 40μ in diameter are seen. The cells possess nuclei having a diameter of 6 to 8μ . They are round, stain deeply, having a very distinct chromatin framework and in some cases nucleoli. For the greater part the nuclei lie in the central portion of the

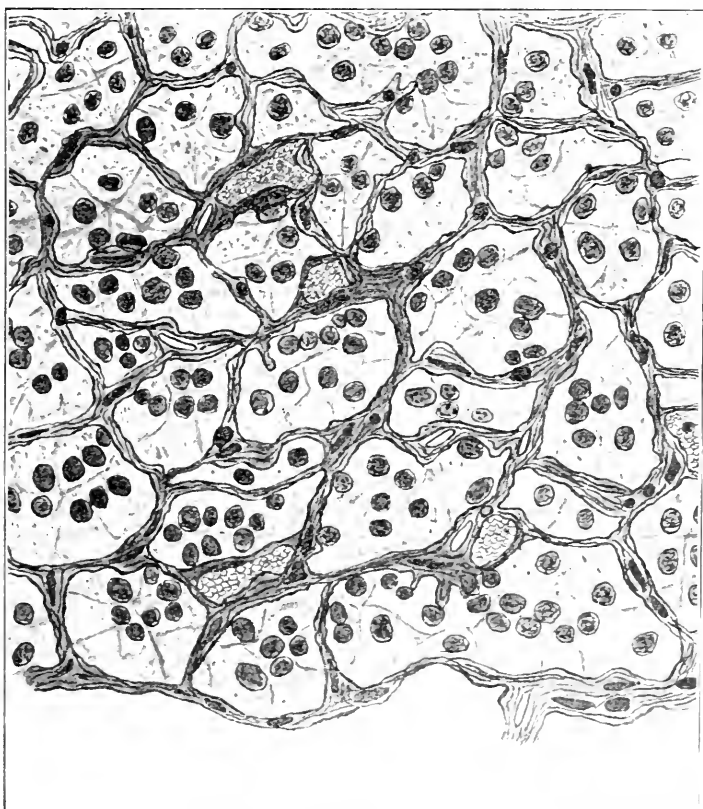


FIG. 2.—From central zone of adrenal body of broad ligament. Leitz, obj. No. 6, eyepiece No. 2, camera lucida drawing. (Reduced one-half.)

cell. In the cells of short columnar type the diameter of the nucleus almost equals the breadth of the cell. On the whole, the nuclei of the central portion stain less deeply than those of the peripheral, and in many cases are vacuolated. No sharp boundary can be drawn between the peripheral and central zones; there is a gradual transition, in that the cell strands of the former lose their radiating appearance and divide up into

the irregular alveoli of the central portion containing the larger cells. It is only in the sections taken at the greatest diameter of the growth that the division into peripheral and central zones can be made out. Near the poles the sections show a more nearly uniform structure throughout.

The protoplasm of the cells of the peripheral zone is slightly granular and is relatively less abundant than in the cells of the central portion. In the latter it is more granular and contains many fat vacuoles, so that these cells appear lighter than those of the periphery. This fatty change is similar to that seen in the adrenals.

The only blood vessels found in the growth are small capillaries which run in the alveolar walls. In the peripheral zone they also appear to radiate toward the centre, running between the radiating strands of cells. In the central portion of the body they form an irregular network between the alveoli. The capillaries possess only an endothelial wall. They contain red blood cells and few leucocytes. There is apparently no large vessel connected with the body. (See note, page 805.)

From its characteristic structure there can be no doubt that the little growth is an accessory adrenal. The epithelial cells are in their arrangement and structure like those of the adrenal cells; they show a similar fatty change, and the numerous capillaries and their relations to the cells likewise resemble adrenal structure. Further, there are no tissues in the broad ligament which in any way resemble this growth. That it could in any manner be derived from remains of the Wolffian body is impossible from the character of its epithelial cells; the further alternative of accessory ovarian tissue cannot be supported for the same reason. It is manifestly not a secondary of any tumor, nor can it be connected with the tuberculous process. While its structure is in itself sufficient to connect it at once with the adrenal, a comparison with specimens of accessory adrenal tissue found in the kidney capsule and cortex shows identity of kind.

The great amount of attention given to the adrenal bodies and to the aberrant growths resembling these in structure has within the last twenty years cleared up many of the intra-abdominal problems which hitherto had baffled both the clinician and the pathologist. The status of accessory adrenals and the character of the tumors arising from them have now been so well established through repeated observations that the questions of their diagnosis have become as fixed and as easy as those of any other pathological condition.

The fact that there exists a special tendency toward the "misplacement" of adrenal tissue has been known since the time of Morgagni.¹ The earliest discovered accessory adrenals were those found near the adrenals themselves, in the adrenal and solar plexuses; later those of the kidney capsule and cortex were observed. That these occur in these places with great frequency is evident from the accumulation of literature upon the subject in recent years and from the great number of reported cases. According to Schmorl,² accessory adrenals are found in the neighborhood of the adrenals, in the adrenal and solar plexuses, and along the adrenal and spermatic veins in 92 per cent of all autopsy cases. The accessory adrenals found in the kidneys and elsewhere are not included in Schmorl's calculation, and reliable statistics as to the occurrence of these do not yet exist. Besides that found in the neighborhood of the adrenals and kidneys, accessory adrenal tissue has been found also along the spermatic vein in the male, in the pampiniform plexus, between the testis and epididymis, in the corpus Highmori, pancreas, liver, and broad ligament. It is therefore probable that this anomaly is of quite common occurrence.

But few cases, however, of accessory adrenals in the broad ligament have been reported. Up to the present date I have been able to find but 23 cases. These are as follows: Marchand³ (first report), 5 cases; Marchand⁴ (second report), 3 cases; Chiari,⁵ 1 case; Dagonet,⁶ 1 case; Ulrich,⁷ 3 cases; Rosa,⁸ 2 cases; Meyer,⁹ 7 cases; Gottschalk,¹⁰ 1 case. My case, added to this list, makes a total of 24.

Marchand in 1883 was the first observer to report this anomaly. Of the 5 cases described in his first paper, 2 were in new-born infants, the others in children of 3 months, 6 months, and 1½ years respectively. In all of these the adrenal tissue consisted of a small body lying between the layers of the broad ligament, rising above its free edge, in the neighborhood of the spermatic (ovarian) venous plexus. In one case two bodies showing the same structure were found.

Chiari's case was in a woman aged 48; Dagonet's in one of the age of 32. Ulrich found the anomaly in a new-born infant, in one 14 days old, and in a 3-year-old girl. One of the 3 cases reported in Marchand's second paper was in a pseudo-hermaphrodite femininus of the age of 50, in whom a hyperplastic accessory adrenal 5 centimetres broad, 3 centimetres thick, and 3 centimetres long was found between the layers of the right broad ligament beneath the ovary. The other two

cases were in adults, in one of whom the condition was found upon both sides.

Rossa's two cases were both in new-born infants, in one of whom two little bodies were found in the left broad ligament. Meyer reported 7 cases in the fetus and young children. Gottschalk's one case was in an adult. My case being in an adult makes the total number of adult cases 7, the other 17 occurring in very young children or in the fetus.

In these cases the microscopical appearance of the body is varied, but in all the diagnosis is made by the characteristic epithelial-like cells and the relations of these cells to the connective tissue and capillaries. A definite division into cortical and medullary portions is usually not found in accessory adrenals; most frequently the structure of the body is uniform throughout, in some cases resembling the cortex and in others the medullary portion. As a rule the accessory adrenals of the broad ligament consist of cortical tissue only. In one of Rossa's cases a structure similar to that of the body described above was found—a peripheral zone differing in structure from the central portion. A central vein may or may not be present.

In all cases the accessory adrenal is found near the ovarian plexus, its position with reference to the ovary and end of the tube varying somewhat. In the majority of cases the body is of very small size; only in one case, that of Marchand, were hyperplastic changes observed. In a few cases adrenal tissue was found in the broad ligament on both sides, but the occurrence is most frequent upon the left side. This fact is in accord with the difference in the anatomical relations of the right and left spermatic veins.

The origin of the accessory adrenals of the broad ligament, as well as of those found in the male genital tract, is explained by Rossa in the intimate relation of the *anlage* of the adrenals and sexual glands. As both of these arise from the Wolffian body, their *anlage* are very closely related. Just in what way the separation of cell groups of adrenal tissue takes place is not yet clear, but such separation may lead to a wide displacement of isolated cell groups through the descent of the generative organs. Since in their early stage of development these organs lie in close proximity, the displacement of a portion of the adrenal nearer to the sexual gland than to the main organ may lead, through the further separation of the adrenal and sexual gland, to a wide displacement and to the

persistence of this isolated tissue as an accessory adrenal. The greater frequency of occurrence upon the left side is to be explained by the asymmetrical development of the adrenals and sexual organs upon the two sides.

For gynecologists the significance and fate of the accessory adrenals of the female genital tract are of great importance. Marchand, in his original paper, advanced the belief that these little bodies gradually vanished, since he found them only in very young children. This was shown to be an error by Chiari and Dagonet, who found them in the broad ligament of adults, and later Marchand himself found them in three adult cases. Ulrich left the question open as to whether they vanished or became invisible from the thickening and increased opacity of the peritoneum. Marchand's one case showed the possibility of these little bodies taking on the same proliferative activity as occurs in the adrenals and accessory adrenals found elsewhere. In this case the primary adrenals were also hyperplastic. Marchand explains the hyperplasia of the adrenal tissue in this instance by the assumption that it was secondary to the aplasia of the sexual glands and their complete functional inactivity.

While this is the only case in which hyperplastic changes in the accessory adrenal tissue of the broad ligament have been observed, and although no case exists as yet in which these bodies have been shown to give rise to new growths, there is no reason to suppose that adrenal tissue in this location is exempt from the changes which take place in it so frequently in other regions. Since the accessory adrenal tissue found elsewhere is especially likely to give rise to new growths, it must be considered as a possibility that benign or malignant tumors may arise in the adrenal tissue of the broad ligament. It remains for future observation to prove this occurrence.

The cases described above show that these bodies may remain unchanged until late adult life. Retrograde changes may occur in them leading to cyst formation or to complete disappearance of the tissue. Von Recklinghausen¹¹ found epithelial cell heaps in the walls of a parametral cyst and in an adenomyoma of the uterus projecting into the cyst, which he could compare in structure only to adrenal tissue, and suggested the possibility that they were identical with the accessory adrenals described by Marchand.

Rossa⁸ found further in four adult cases groups of cells in the broad ligament, which, after a careful differential diagnosis,

he concludes to be misplaced adrenal tissue in a state of retrograde metamorphosis. The relation of this change to the formation of subserous cysts in the broad ligament is clearly shown in one of his cases, in which three small cysts were found whose walls were lined with epithelial-like cells similar to those of adrenal tissue. Rossa therefore concludes that there must be added to the known pathological conditions of the broad ligament a new form of cyst derived from misplaced adrenal tissue.

Aichel,¹² who has made the latest careful study of the development of the adrenals in vertebrates, holds that these organs in all of the higher vertebrates develop from the primitive kidney. To the accessory adrenals found in the neighborhood of the testicles and in the broad ligament he ascribes the same origin, and holds that they are not pathological misplacements, but are normal organs, although they are usually not apparent. In his comparative study of the development of adrenal tissue in the lower vertebrates, he found that the *anlage* of the suprarenal and interrenal bodies likewise developed from the primitive kidney, the former from the epithelium of the transverse tubules, the latter from that of the infundibula. To the latter (interrenal organ) the adrenals of man and the higher mammals correspond, while the suprarenals of the lower vertebrates are homologous with the adrenal tissue found near the testicles and in the broad ligament.

The comparative anatomist would then regard the human adrenals as interrenals, and the adrenal tissue found in the broad ligament and near the testis as suprarenals. Since the latter term does not apply to the location of these bodies, Aichel proposes to call them *Marchand's adrenals* (*Marchand'sche Nebennieren*), since Marchand was the first to observe and describe them. With the misplaced adrenal tissue found in the neighborhood of the adrenals themselves Aichel holds that Marchand's adrenals have nothing in common. The former he looks upon as accidents of development, to be placed in the same class with accessory spleens, accessory salivary glands, etc.

That the adrenals of Marchand have functional activity remains yet to be proved. This question is of the greatest importance in relation to those animal experiments where the adrenals have been removed with the view of obtaining light upon the adrenal function. While the removal of both organs at one time is followed by death, the removal of one, followed at a later time by the extirpation of the other organ, does not

lead to death or to disease. Aichel holds it to be possible that this may be explained by the assumption that the adrenals of Marchand take on functional activity in compensatory degree but slowly, and that they are able to carry on the function of the main organs in those cases where these were not entirely destroyed or removed at the same time. Since in none of these experiments has the possibility of compensation through the activity of Marchand's adrenals been considered, all conclusions derived from such experiments as to the vital function of the adrenals must be considered insufficient. That Marchand's adrenals undergo hyperplasia, in conditions where the chief organs themselves are hyperplastic, is shown in Marchand's case of pseudo-hermaphroditism.

In conclusion, it may be said that while Aichel's results need further confirmation, it is very probable that his view is the correct one and that adrenal tissue is a normal constituent of the broad ligament. The practical importance of this is very great, not only to the physiologist and pathologist, but to the clinician and gynecologist as well. Without doubt we have in Marchand's adrenals certain anatomical elements which may explain pathological conditions of the broad ligament and testis heretofore enveloped in mystery. Many tumors and cysts of these regions, whose origin is now unknown to us, may be shown by future observation to be derived from these little organs.

¹ NOTE.—In making serial sections of the entire adrenal body there was found at one pole a more nearly typical adrenal structure: cortex, medullary portion, and large central vein surrounded by numerous bands of unstriped muscle. In this portion the cells of the cortex show a fatty change. I have as yet been unable to make out any nervous structures.

REFERENCES.

1. MORGAGNI: *Epistol. anatom.*, 1740. (Rossa's cit.)
2. SCHMORL: Rossa's cit.
3. MARCHAND: *Virch. Arch.*, Bd. xcii., 1883.
4. MARCHAND: *Inter. Beitrag. z. wissenschaft. Med.*, Bd. i., 1891.
5. CHIARI: *Zeitschrift f. Heilkunde*, Prag, Bd. v., 1884.
6. DAGONET: *Zeitschrift f. Heilkunde*, Prag, Bd. vi., 1885.
7. ULRICH: *Ziegler's Beiträge*, Bd. xviii., 1895.
8. ROSSA: *Arch. f. Gynäkol.*, Bd. lvi., 1898.
9. MEYER: *Gesell. f. Geb. u. Gyn.*, Berlin, February, 1898.
10. GOTTSCHALK: *Gesell. f. Geb. u. Gyn.*, Berlin, February, 1898.
11. VON RECKLINGHAUSEN: *Die Adenome u. Cystadenome*, etc., Berlin, 1896.
12. AICHEL: *Münch. med. Wochensch.*, September 4, 1900.

THE TREATMENT OF PERSISTENT OCCIPITO-POSTERIOR
POSITIONS OF THE VERTEX.*

BY

GEORGE L. BRODHEAD, M.D.,

Professor of Obstetrics, New York Post-Graduate Medical School and Hospital; Instructor
in Obstetrics in the University and Bellevue Hospital Medical College; Assistant
Attending Physician to the Mothers' and Babies' Hospital; Fellow of
the New York Obstetrical Society, etc.

IN the selection of a subject for a paper to be read before this Society, I have been guided not only by very great personal interest in this class of cases, but also by the knowledge that in the discussion of the difficulties which attend the management of such cases we shall be the better able to treat them. It is not my purpose to speak of the causes which are responsible for the condition, nor the relative frequency of persistent occipito-posterior positions, but to preface the subject of treatment with the statement that the condition is one which is not uncommon, which is attended by a mortality for the child far greater than that of the normal position, and a condition which causes greater suffering, more extensive lacerations of soft parts, greater liability to hemorrhage and sepsis, and in some cases the death of the mother. In looking through the literature of the subject one finds the greatest variety of methods of treatment, and in some instances the earnest seeker after truth would be sadly confused as to which course to pursue, while to follow the teachings of other writers would result in the gravest injuries to both mother and child.

Before speaking of the actual treatment of persistent occipito-posterior positions, let us consider briefly the prophylactic measures which may be adopted in the treatment of posterior positions of the vertex. Before labor has begun, where the membranes are intact and engagement has not taken place, it has been recommended by Reynolds¹ to place the patient in the knee-chest position twice each day for the last two weeks of pregnancy, and then in the lateral position. By the use of this method he claims that the position will almost surely become anterior. Even where labor has begun, the membranes

* Read before the New York Obstetrical Society, October 9, 1900.

being unruptured and the head above the brim, he advises the trial of this method. It has also been suggested that an attempt be made to bring the occiput anterior by external manipulations. There can be no question that these methods, where used before labor begins, will bring about good results in many cases, and therefore ought to be recommended.

Let us consider now the treatment of persistent occipito-posterior positions, labor having advanced to a point where, in the interest of mother or child, operative procedure is deemed advisable. For convenience all cases may be divided into three classes. The first class will include cases in which the vertex is above the brim of the pelvis; the second, cases in which the vertex is engaged or occupies the pelvic cavity, but is not yet at the outlet; and the third, cases in which the vertex has reached the outlet and is pressing upon the perineum. The first class of cases, in which the vertex in posterior position remains above the brim, is met with far less frequently than the other two. In the great majority of cases of normal labor the vertex, whether in anterior or posterior position, will engage in the brim or descend into the pelvic cavity before assistance is found necessary. This is indeed fortunate, for the treatment of occipito-posterior cases in which the vertex is below the pelvic brim is much simpler and more easily carried out than where the vertex remains above the brim. Among the operative procedures which have been advocated are the following: 1. Rotation of the head and body forward by external manipulation, with the subsequent application of forceps. 2. Rotation of the head to anterior position by internal manipulation, followed by forceps. 3. The application of forceps without previous attempts at rotation. 4. Internal podalic version. Early in labor, with membranes intact, the rotation of the occiput anteriorly by external manipulation might be successfully carried out; but where labor has been in progress for many hours, whether the membranes are ruptured or not, rotation is accomplished only with great difficulty, if at all. I believe that in the choice between forceps and version, in cases of persistent occipito-posterior position above the brim, each operator should be guided by individual experience in operative obstetrics. No rule can be laid down in these cases for one or the other method of treatment, nor can it be said that either method is inadmissible in all cases. For men of comparatively small operative experience, it is my belief that version, not only in occipito-posterior but in occipito-anterior

positions as well, is a safer operation for the mother than high forceps. The fetal mortality, on the other hand, will be higher with version than with forceps rightly used. With reference to the internal manual rotation of the occiput forward prior to the application of forceps, it can be said that in the hands of men accustomed to intrauterine manipulation the occiput can in some instances be rotated anteriorly, but that in many cases, especially those in which the membranes have been ruptured for many hours, the operation is difficult, and in cases where the head is firmly grasped by the lower segment of the uterus, which may have been thinned by protracted labor, even dangerous. In the latter class of cases forceps carefully used would be safer than version, even in the hands of men of comparatively small experience. For operators of considerable experience, possessed of the proper knowledge of the technique of the high forceps operation, the following plan seems to me the best for both mother and child:

Under deep anesthesia an attempt should first be made to rotate the occiput to the front by the introduction of the hand into the uterine cavity. Failing in this, forceps should be applied to the head in the posterior position, by the so called pelvic application, and the head extracted in a manner which will be outlined later on. The high forceps operation, in these as in all other cases, is always to be undertaken with a proper appreciation of its difficulties and dangers. Nevertheless, in careful hands and with normal conditions, I believe that the forceps, in posterior as well as in anterior positions above the brim, will give better results than version as far as the child is concerned, and results equally as good for the mother. Failing to deliver by forceps, the child being alive, version, of course, is the other alternative. For men who are uncertain as to their ability to conduct the high forceps operation correctly, and whose experience is small, version is much the safer operation and is to be advised. But even here, in cases where there is but little amniotic fluid left and the uterus is tightly contracted about the fetus, the careful, tentative use of the forceps is to be preferred to internal podalic version. Very little difficulty may be experienced with forceps, whereas version might result in a rupture of the uterus.

The second class of cases includes those in which the vertex is engaged or is in the pelvic cavity, but is not yet at the pelvic outlet. In many of these cases the failure of the head to rotate and advance seems to be caused by imperfect flexion.

During each pain, therefore, the forehead may be pushed upward in order to increase flexion and bring the occiput lower down. Should further assistance be indicated the forceps is to be used. If the vertex is merely engaged, the blades are applied at the sides of the pelvis by the so-called pelvic application, the head being grasped, as a rule, somewhat obliquely. If the vertex is in the pelvic cavity the blades should be applied directly to the sides of the head, the so-called cephalic application being made. Traction should then be carefully made in the proper axis until the vertex is brought to the vulvar outlet. Should the occiput rotate anteriorly during the operation, as is frequently the case where the position at the beginning of the operation is more nearly transverse than posterior, the treatment becomes that of the normal position. If the occiput remains in posterior position when the vertex has reached the outlet, further treatment should be the same as for those cases which comprise the third class of our subdivision—namely, persistent occipito-posterior position at the outlet, on the perineum. It is more particularly to the treatment of this most frequent class of cases that I wish to call your attention this evening. In the great majority of occipito-posterior positions rotation is spontaneous, and therefore the normal mechanism may be said to be that of rotation from posterior to anterior position. But although the occiput usually rotates forward, the exceptions to the rule are so numerous that one must consider carefully the treatment to be followed in such cases. It will be generally conceded, I believe, that the birth of the head in the occipito-posterior position, even where it is accomplished without great difficulty, is attended with much greater danger of laceration of the soft parts than is the case with the occiput to the front. Again, it will be admitted by all that in some cases it is difficult to extract the head if it remains in posterior position, and in some cases impossible to extract it without great injury, not only to the child, but to the soft parts of the mother as well. Again, it will be admitted, I think, that the fetal mortality in persistent occipito-posterior cases is higher than that where the occiput is rotated forward by one means or another. In all cases, then, with the exception of some multiparæ in whom the soft parts have been so stretched and torn as to offer no resistance to the birth of the head, it is desirable, and indeed necessary, in the best interests of mother and child, to bring about in some way the forward rotation of the occiput. This can best be done by the use of forceps.

Instrumental rotation has been advised from time to time by various writers, but in spite of the excellence of this method it is surprising to observe that no one of our modern text books advises it, and in fact some do not speak of the operation. Nevertheless the use of forceps in these cases is a most valuable one, and as the method is better understood and more carefully followed it will be given its proper place as the best method of rotating the occiput to the front. In reading over the literature of the subject one finds many bitter attacks on the method; and, judging from results which were said to follow its use, one can hardly wonder at them. But I am convinced that the operation was not performed as it should be, for certainly the results in the hands of a number of operators in New York City are most excellent and show conclusively that the method is a good one when rightly used. Let me quote from a few of our text books in which the method is condemned. Lusk,² in the last edition of his work, in referring to persistent occipito-posterior positions of the vertex, said: "As attempts to rotate the occiput to the symphysis by instrumental means are rarely successful, it is advisable under such circumstances to apply the forceps directly to the sides of the child's head and, in imitation of the normal mechanism, to extract the head with the occiput posterior."

As a matter of fact, the operation as now performed is usually successful, and the head can be extracted with the occiput forward.

Playfair³ says there is danger in the method and "advises against forcible twisting of the head with forceps with no assurance that the body will follow." As a matter of fact, the body almost invariably rotates with the head or after the head has been rotated; and even if it does not, no serious harm is done, for the rotation is not extensive enough to cause harmful twisting of the neck. Again, Hirst⁴ states that in one case where no instruments were used there was rotation of the head without the body and the child was fatally injured, thus proving that such results are possible even without instrumental rotation. Playfair³ says again: "It is impossible to conceive that such violent interference would not be attended with serious risk of injury to the neck of the child." He leaves the rotation entirely to Nature and uses traction only. The cases to be described later on show that the operation, carefully performed, gives no results such as those mentioned. Reynolds⁵ says: "The production of rotation by instrumental

means through an arc of 180° is attended by so much danger from laceration of the vagina as to be seldom wise"; and in another article that "it is so dangerous to the soft parts as to be permissible to none but the most experienced operators." It is never necessary to cause rotation through an arc of 180° , and indeed an arc of 90° is sufficient in most cases, and certainly one of 135° would be sufficient in any case. The dangers to the soft parts can be largely, if not entirely, avoided by care in the operation.

The conditions which should be fulfilled before the operation of rotation is undertaken are these: (1) The head should be as well flexed as possible: (2) the vertex should be well down in the pelvis and preferably at the vulvar outlet; (3) the membranes must be ruptured; (4) the cervix should be fully dilated or dilatable; (5) the bladder and rectum should be empty; (6) last, but not least, the operator should be positive of his diagnosis of position. The last four of these conditions must, of course, be complied with before any forceps operation should be done. The genitals are prepared in the usual manner, but no vaginal douche is given unless there have been frequent examinations, unless the vagina is dry, or there is reason to suspect possible infection from careless examination. Wherever it is possible the patient should be placed upon a table, but where inconvenient the buttocks should be brought to the edge of the bed. The legs are held up with leg-holders, a sheet, or by assistants, and very light chloroform anesthesia used. For the operation of rotation and subsequent extraction I have invariably used the Tucker solid-bladed forceps, an instrument which is superior to any other for a number of reasons. The head, which is frequently moulded to an extreme degree, often fits the pelvis so tightly that it is difficult to introduce a fenestrated blade. The same difficulty is experienced in removing the blades, preparatory to a reapplication, after rotation is accomplished. The solid blades are more easily introduced, more easily applied to the sides of the child's head, are removed with greater ease, and, finally, mark the child less than any others. The forceps, after sterilization, is immersed in a one per cent lysol solution, which answers admirably as a lubricant. The blades are introduced laterally at the sides of the pelvis, each blade being rotated so as to occupy a position at the side of the head, after which the forceps is locked. I believe that it is safer to apply the forceps in the usual manner (the concavity of the

pelvic curve looking forward) than to attempt the rotation with the forceps in the inverted position, but in the hands of an expert the latter method might be safely used. One of the great objections to rotation with forceps has been the danger of laceration of the soft parts with the tips of the blades. Laceration would surely occur if rotation were to be made with the handles of the forceps held in the median line, but this can be easily avoided by careful attention to the details of the operation as they are given below.

Straight forceps would perhaps be preferable to curved for the purpose of rotation, but with care one can get results just as good with the curved instrument. By carrying the handles of the instrument toward the thigh of the patient toward which the concavity of the pelvic curve looks—or, in simpler words, toward the right side of the operator if the position is R. O. P., and the left side if the position is L. O. P.—the blades become for all practical purposes straight blades.

Two fingers of one hand of the operator are placed upon the vertex, preferably upon the sagittal suture, and kept there during the operation in order to note whether the head is turning with the blades or whether the blades alone are being rotated. The handles of the forceps are seized with the other hand and the blades held firmly against the sides of the child's head. The fingers of the one hand being kept in position on the sagittal suture, the head is rotated during a contraction from the posterior to a transverse position (R. O. P. to R. O. or L. O. P. to L. O.) by rotating the handles of the forceps, at the same time carrying the handles downward and backward until the concavity of the pelvic curve faces the lateral wall of the pelvis. The head is then held in this transverse position for several moments until several contractions and relaxations of the uterus have taken place. During the relaxed periods the body of the child will usually adapt itself to the position of the vertex—in other words, the back rotates forward. The head is then rotated to the R. O. A. or L. O. A. position, as the case may be, by rotating the handles, at the same time carrying the handles still further backward and downward. By so doing the tips of the blades are kept constantly in the middle of the pelvis and therefore cannot lacerate the vagina. The head is held in the oblique anterior position for several moments more, in order to allow the body, during a relaxed condition of the uterus between its contractions, to rotate anteriorly to accommodate itself to the position in which the head is held. The rotation of the body can be

verified by palpation and auscultation, and by the fact that after removal of the blades the position will remain anterior. After such a rotation it is surprising to note the advance which often takes place immediately after the occiput has come to the front, and in many cases, when once the head has been turned to the transverse position, the rest of the rotation is spontaneous and delivery is easily completed. After the removal of the blades the rest of the delivery may be left to the natural forces, but as a rule it is better to reapply the blades in the usual manner and complete the operation in the usual way. If rotation takes place easily, as it generally does, much has been gained, especially in the primipara; but if the rotation cannot be accomplished except by the use of force, the head should be extracted in the posterior position, the forehead being brought down under the pubic arch and the head made to advance by using traction in such a way as to promote flexion. When it is evident that delivery can be completed by the natural forces, the blades are removed and the rest of the delivery completed in the usual manner. Too great stress cannot be laid upon the conditions which are most essential to success, viz., the well-flexed head, low position of the vertex, and the details of the operation as above outlined. That the operation is safe and accompanied by no danger is proved conclusively to my mind by the results obtained in the cases reported below. In the eight cases which I shall report, it is of interest to note that in four of the eight the position was L. O. P., showing that although, according to statistics, the L. O. P. position is much less frequently met with than R. O. P., the former is met with not infrequently.

CASE I.—I-gravida, age 26; normal pelvis; labor at full term. When first examined in the first stage the head was in the middle of the pelvic cavity in R. O. P. position, the cervix admitted three fingers, the membranes were intact. The length of the first stage was nine hours and fifteen minutes, the head advancing slightly during this time. During the first hour of the second stage there was slight advance, then for another hour there was absolutely none. The vertex was low down in the pelvis, not yet on the perineum, in R. O. P. position, the cervix fully dilatable, flexion only fair. Forceps was clearly indicated, as the patient was now thoroughly tired out, and the blades were easily applied to the sides of the head. With careful traction flexion was increased and the head was brought still lower in the pelvis. After a half-hour's traction the vertex reached the outlet. Rotation to R. O., then to

R. O. A., was accomplished with little difficulty. The blades were then removed, reapplied, and further traction used for ten minutes in order to bring the vertex well out of the vulva, at which time the blades were removed and the remainder of delivery completed in the usual manner, about fifteen minutes being occupied. The child was born in excellent condition, showed no marks from the forceps, and weighed eight and a quarter pounds. The perineum was intact, the vagina at the final examination showed one small cicatrix 1.5 by 1.5 centimetres in size in the anterior fornix just in front of the cervix, and the cervix showed a small bilateral laceration. The puerperium was uneventful. Mother and child have done well.

CASE II.—This case occurred in my service at the Post-Graduate Hospital. I-gravida, age 25; normal pelvis; labor at full term. The first stage was of four and a half hours' duration; pains strong and regular. The vertex was in the pelvic cavity, position L. O. P. During the first part of the second stage there was some advance; the vertex came further down in the pelvic cavity. At the end of one hour and three-quarters the head was well flexed, still in L. O. P. position (but almost directly O. P.), there was a thick caput, and no advance had been made for an hour. The patient was tired out and forceps seemed indicated. The blades were introduced laterally and the head seized in O. P. position. Moderately strong traction for half an hour advanced the head in the O. P. position to the floor of the pelvis; then with the forceps the head was slowly and carefully rotated to L. O., then to L. O. A. For several moments the head was held in L. O. A. position; then the blades were removed and the forceps reapplied, the position remaining L. O. A. Ten minutes more were occupied in bringing the vertex well out of the vulvar orifice, and in one hour from the time the operation was begun the head was born. The child was in perfect condition, weighed eight and a quarter pounds, and showed the following forceps marks: on the left cheek over the malar process there was a small pressure area, and there was a superficial line of redness in front of the right ear, with slight right facial paralysis. These marks disappeared quickly and the child did splendidly. Just before the forceps was removed a small laceration appeared at the fourchette, and in removing the blades a strong pain increased the tear. After the birth of the body it was seen that the laceration was only $\frac{1}{2}$ by 1 centimetre at the fourchette, the sulci and the vagina being apparently intact. The

puerperium was normal, and the final examination showed several small cicatrices on either side of the vagina near the cervix, each scar being about two centimetres in length. The cervix showed a medium-sized left unilateral laceration. The uterus was well involuted. Mother and child continued to do well.

CASE III.—Three days after the last case had been operated upon another presented itself in the service of the Post-Graduate Hospital and was operated upon by Dr. Siler, who was then in charge of the lying-in department, under my direction. The patient was a I-gravida; normal pelvis; labor at full term. She was first seen when in the second stage. The head was in R. O. P. position, almost O. P. at the outlet. For two hours after the arrival there was no advance, although flexion was good. The forceps was easily applied to the sides of the head and rotation accomplished without difficulty. A few easy tractions (made after removal and reapplication of the forceps) brought the vertex well out of the vulva, when the blades were again removed and delivery completed in the usual way. About twenty minutes were occupied in rotation and subsequent extraction, and ten during the rest of the delivery. The child was in excellent condition, weighed seven and a half pounds, showed no marks whatever, and perineum and vagina were intact as far as could be made out. The mother had a normal puerperium; the child did nicely. Final examination revealed a small cicatrix in left fornix, cervix and uterus in good condition, both well involuted.

CASE IV.—I-gravida, age 35; normal pelvis; labor at full term. First seen in consultation in the second stage. The first stage had been of eighteen hours' duration, and during this time the vertex had descended from above the brim to the middle of the pelvic cavity, remaining in R. O. P. position. When the second stage had lasted two hours and no advance had been made, the patient was so exhausted that forceps was indicated. There was marked edema of the perineum and vagina, and laceration seemed inevitable. The blades were applied to the sides of the head and strong traction made to bring the head to the outlet, where it could be the more easily turned. The head came down a little lower; then, as the fetal heart became very rapid (170), it seemed best to attempt rotation, as it required very strong traction to advance the head further in the R. O. P. position. The head was therefore rotated to R. O., then to the R. O. A. position, the rotation being easy of accomplishment. The remainder of the delivery

was comparatively easy, the head advancing well with each traction. About twenty minutes were occupied in traction and rotation. The child weighed nine and a quarter pounds, was in good condition; head was well moulded; there was moderate left facial paralysis and a slight scar over the right orbital ridge, a superficial line in the middle of the forehead, a little redness of one cheek, and a few lines of redness under the left ear and on the left side of the neck. The vagina and perineum, on account of the edema, were lacerated early in the operation, before rotation was attempted, and the laceration can certainly not be attributed to the rotation with forceps. The vagina showed several deep tears, and the perineum was torn to the sphincter during the extraction of the head in O. A. position. The lacerations were repaired and both mother and child are in perfect health at the present day.

CASE V.—I-gravida, age 25; pelvis normal; labor at full term. First stage of twenty hours' duration, the vertex being in the pelvic cavity in L. O. P. position, fairly well flexed. During a second stage of two hours' duration there was a slight advance in the first hour, none in the second. The head was brought well down to the pelvic floor, then rotated first to L. O., then to L. O. A., held there several moments, after which the blades were removed and reapplied. About forty-five minutes were spent in the entire operation, most of the time being spent in bringing the head low down in the pelvic cavity. The child was born in good condition, weighed seven and three-quarter pounds, and showed only superficial marks from forceps. There was a laceration in the left sulcus 1.5 centimetres deep and 5 centimetres long, the head being of good size and the outlet rather contracted. Final examination revealed the vagina and the cervix in good condition; perineum healed. Mother made a good recovery, and both have been in perfect health ever since.

CASE VI.—III-gravida, age 34; pelvis normal; previous labors easy, present labor at full term. The first stage lasted thirty-six hours, membranes having ruptured before pains began. At the end of the first stage the vertex was in L. O. P. position, high up in the pelvic cavity, poorly flexed. During the first part of the second stage there was some advance, the head coming down to the middle of the pelvic cavity, still in L. O. P. position. During the last hour of the second stage the pains became weak and infrequent, and advance ceased, the head by this time having become fairly well flexed. The forceps was applied, the head brought low down

and rotated to L. O., then to L. O. A., after which advance was rapid and delivery easily accomplished. The child was in excellent condition, weighed nine pounds, showed no forceps marks; vagina and perineum were intact; puerperium absolutely normal.

CASE VII.—I-gravida; justo-minor pelvis; labor at full term. The first stage had been of eighteen hours' duration when I saw the patient for the first time in consultation. The membranes had ruptured hours before, and patient was by this time in an hysterical condition. The cervix was very soft and was easily dilated manually, after which the head of the child (which was small), in R. O. P. position above the brim, was seized with the forceps and advanced without much difficulty into the pelvic cavity. Moderately easy traction caused rapid advance, and when the vertex had been brought to the perineum rotation was easily accomplished, the blades were removed, reapplied, and the head soon extracted. The child was born in excellent condition, weighed about six pounds, showed no marks, and the soft parts were absolutely intact. Recovery was uneventful; mother and child did well.

CASE VIII.—III-gravida; normal pelvis; previous labors all easy, present labor at full term. Patient first seen by me in consultation after a second stage of three hours' duration. The pains during the second stage had been strong and frequent; the vertex had advanced so that the vulva was slightly distended during each pain, but no progress had been made for the last hour. The position was L. O. P., the cervix fully dilated, flexion of moderate degree. The forceps was applied to the sides of the head and the head easily rotated, first to L. O., then to L. O. A. position. Several minutes were occupied in the rotation, the position remaining L. O. A. thereafter. The blades were then removed, reapplied, and the head extracted with a few easy tractions, not more than eight minutes being consumed in the entire operation. The child weighed eight pounds. There were no forceps marks, careful examination failed to reveal any laceration of the soft parts, and both mother and child have done well since the operation.

60 WEST FIFTY-EIGHTH STREET.

LITERATURE.

1. REYNOLDS: American Text Book of Obstetrics, 1895.
2. LUSK: The Science and Art of Midwifery, last edition, 1892.
3. PLAYFAIR: Science and Practice of Midwifery, last edition, 1898.
4. HIRST: Text Book of Obstetrics, 1898.
5. REYNOLDS: Practice of Midwifery, third edition, 1896.

THE REMOVAL OF PELVIC INFLAMMATORY MASSES BY THE
ABDOMEN AFTER BISECTION OF THE UTERUS.¹

BY

HOWARD A. KELLY, M.D.,
Baltimore.

(With nine illustrations.)

I POINTED out but recently² the great advantages which accrue from the bisection of the myomatous uterus in an abdominal enucleation in certain complicated cases. I now desire to call your attention to the great value of a somewhat similar procedure in certain bad pelvic inflammatory affections.

In most instances of pelvic infection, the ovaries are innocently, only accidentally, involved in the inflammatory process, and as a rule one or both of them can be saved, even though it is found necessary to sacrifice both uterine tubes. If one ovary is saved, the uterus must also be saved if possible, as by doing this we conserve the function of menstruation as well as that of internal secretion of the ovary.

Where the ovaries are seriously implicated in the disease, where they are converted into abscess sacs or into large hematomata, or where they are so densely and intimately matted in with the inflamed tubes that it is useless to attempt to save them, the removal of all the diseased organs together with the uterus is demanded whenever it is possible, in the following way: by freeing the tube and the ovary on the least adherent side first, and then, after tying off the broad ligament and pushing down the bladder and securing the uterine artery, the most difficult side is easily reached and enucleated by cutting across the cervix and exposing the opposite uterine vessels and ligating them. The uterus is then pulled up until the round ligament is caught and divided.

At this point the operation may follow one of two courses, according to the difficulties encountered. In the first place, if,

An address delivered before the Southern Surgical and Gynecological Association at Atlanta, Ga., November 13, 1900.

² Johns Hopkins Hospital Bulletin, 1900, xi., p. 56, and AMERICAN JOURNAL OF OBSTETRICS, 1900, xlii., August.

after dividing the uterus and pulling it up, the remaining tube and ovary can be readily enucleated by peeling them out from below upward by working with the fingers in the lower and anterior part of the pelvis, then the enucleation may be concluded by removing all the structures in one mass. In the second place, if the tube and ovary on the far side are densely adherent and offer any serious difficulties in the enucleation, then I would clamp off the uterus at its cornu and remove it with one tube and ovary, and so leave the more difficult side to be dissected out after emptying the pelvis, securing all the advantages of increased space and light. I have already described this method as that of enucleation by a continuous transverse incision from left to right or from right to left.¹

It is now my desire to describe another method of enucleation through an abdominal incision which is applicable to a class of cases still more difficult than those just referred to. Let us suppose, for example, a case in which there are *pelvic abscesses on both sides densely adherent to all the surrounding structures*, including the uterus: we will also suppose that the uterus itself is almost or quite buried in a mass of adhesions. In such a case the plan I have just described in detail is scarcely applicable, inasmuch as there is no easier side to begin on to start the enucleation, for both sides present extreme difficulties.

The method of a continuous transverse incision does actually give us, it is true, a great advantage over the older method of tying down on both sides, for the simple reason that the enucleation of the further side, wherever we begin, is always easier, even though the difficulties of the first side are just the same by either method.

If now I could devise any method by which the enucleation of *both tubes and ovaries* could be effected from below upward, it is manifest that a great advantage would be gained.

The vaginal-hysterectomists have thus far had a decided advantage over those of us who prefer to operate above the symphysis, in the greater facility with which the adherent structures can be detached when they are attacked in the direction from the pelvic floor upward. In the method I am now about to describe this decided advantage is secured for and combined with the other great advantages of the abdominal route, that of increased room and increased facilities of

¹ Dr. Pryor, of New York, also informed me in a personal letter that he had used this method of enucleation in inflammatory cases.

handling, abundant illumination, as well as the detection of various complicating conditions.

The steps are these: If the uterus is buried out of view, the bladder is first separated from the rectum and the fundus found; then, if there are any large abscesses, adherent cysts, or hematomata, they are evacuated by aspiration or by puncture; the rest of the abdominal cavity is then well packed off from the pelvis.

The right and left cornua uteri are each seized by a pair of

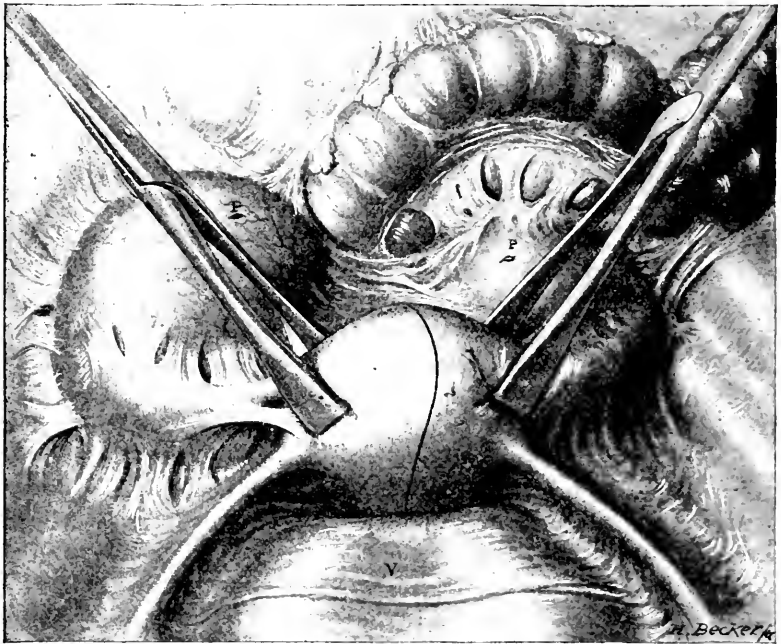


FIG. 1.—The first step in the bisection of the uterus. Fundus exposed, and both cornua grasped by forceps and pulled up. The black line indicates the line of section.

stout museau forceps and lifted up; the uterus is now incised in the median line in an antero-posterior direction, and as the uterus is bisected its cornua are pulled up and drawn apart. With a third pair of forceps the uterus is grasped on one side on its cut surface, as far down in the angle as possible, including both anterior and posterior walls. The museau forceps of the same side is then released and used for grasping the corresponding point on the opposite cut surface, when the remaining museau forceps is removed. In this way two forceps are in constant use at the lowest point. I commonly apply them

three or four times in all. As the uterus is pulled up and the halves become everted and it is bisected further down into the cervix, if the operator prefers to do a panhysterectomy the bisection is carried all the way down into the vagina. The uterine canal must be followed in the bisection, if necessary using a grooved director to keep it in view. The museau forceps are now made to grasp the uterus well down in the cervi-

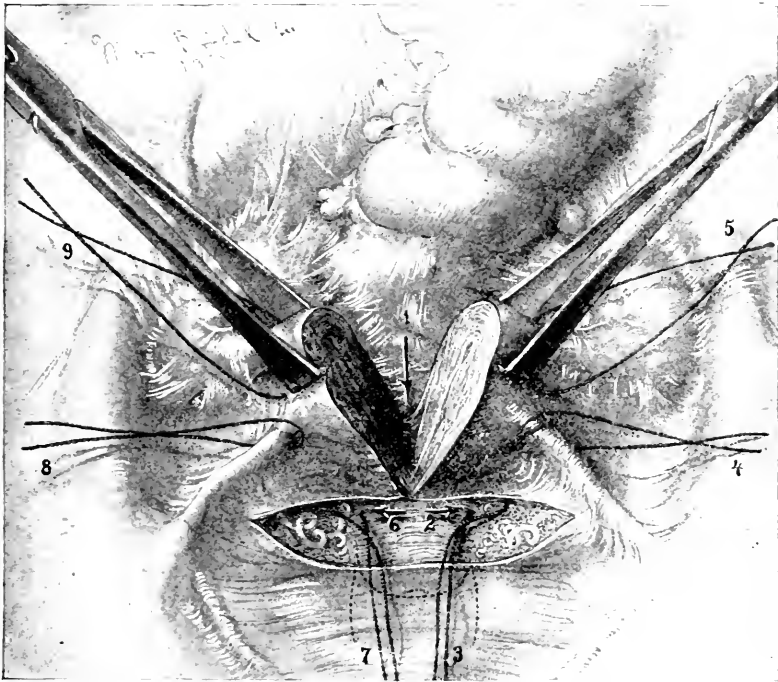


FIG. 2.—The fundus bisected down into the cervix. The bladder detached and pushed down. The order is: 1, division of the fundus in the direction of the arrow; 2 division of left half of the cervix, exposing the left uterine vessels; 3, control of the left uterine vessels; 4, clamp on the left round ligament; 5, clamp to the left uterine cornu; 6, division of right cervix; 7, control of right uterine vessels; 8, clamp to right round ligament; 9, clamp to right uterine cornu, followed by enucleation of the inflamed ovaries and tubes.

cal portion, if it is to be a supravaginal amputation, and the cervix is bisected on one side. As soon as it is divided and the uterine and vaginal ends begin to pull apart, the under surface of the uterine end is caught with a pair of forceps and pulled up, and the uterine vessels, which can now be plainly seen, are clamped or tied. As the uterus is pulled still further up, the round ligament is exposed and clamped, then finally a clamp is applied between the cornu of the bisected uterus and the tubo-

ovarian mass, and one half of the uterus is removed. The opposite half of the uterus is also taken away in the same manner.

The pelvis now contains nothing but rectum and bladder, with right and left tubo-ovarian masses plastered to the sides of the pelvis and the broad ligaments, affording abundant room for investigation of their attachments, as well as for deliberate and skilful dissection; the wide exposure of the cellular area over the inferior median and anterior surfaces of the

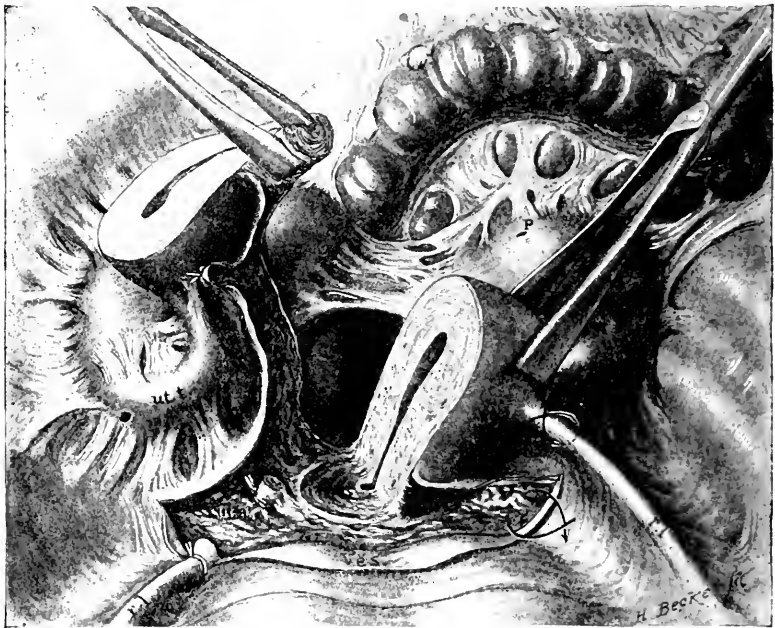


FIG. 3.—The uterus bisected, and the right half inverted and attached only by its cornu. Showing also the ease with which the right tube and ovary can be attacked from below.

masses offers the best possible avenue for beginning their detachment and enucleation.

The operator will sometimes find, on completing the bisection of the uterus, that he can just as well take out each tube and ovary together with its corresponding half of the uterus, reserving for the still more difficult cases, or for a most difficult side, the separate enucleation of the tube and ovary after removal of the uterus.

The operation which I have just described is not recommended to a beginner in surgery; the surgeon who undertakes

it must be calm and deliberate, and must bear in mind at each step the anatomical relations of the structures.

The most critical point is the bisection of the cervix and controlling the uterine vessels; if the cervix is slowly and cautiously severed, with a steady traction on the uterus under perfect control, there is no danger of seeing the organ suddenly tearing out with rupture of the uterine vessels and frightful hemorrhage. As the divided cervix is pulled apart the uterine vessels are beautifully exposed and easily caught;

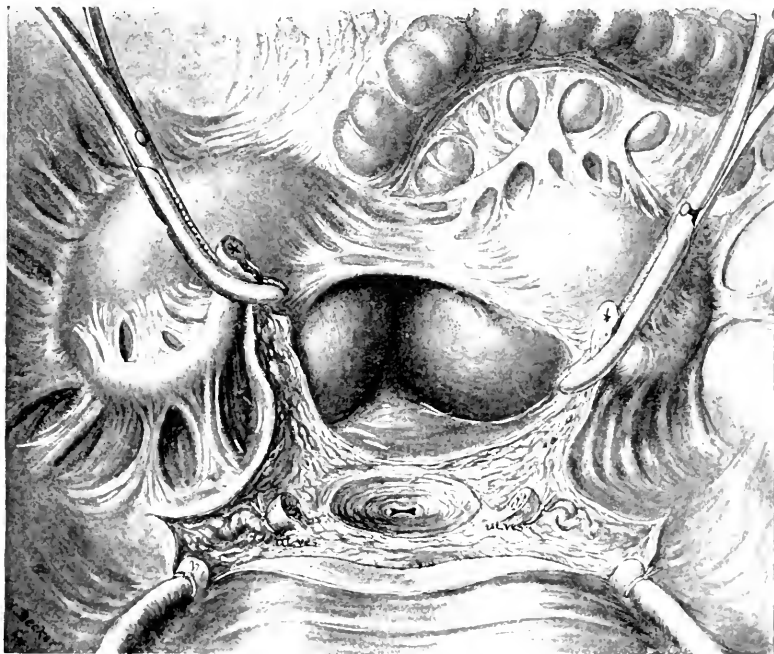


FIG. 4 shows the pelvis with the uterus removed, leaving the adherent tubes and ovaries to be enucleated afterward.

only a clumsy operator will plunge his needle or a pair of forceps deep down into the tissues and clamp a ureter. By cutting up the cervix so as to leave a snipe on each side, the uterine vessels can be caught at a higher level than that of the division of the cervix.

There is no risk of injuring the bladder, which needs less attention than in any other method of hysterectomy. When the bisection reaches the vesico-uterine fold it may be continued carefully behind this fold well down into the cervix under the bladder, which is then easily pushed down as the

divided cervix is pulled apart. A simple and a safe way is also to incise the vesico-uterine peritoneum from side to side and push it down with a sponge on a staff and bare the cervix.

If the uterus is densely adherent to the rectum all the way up to the fundus, a modification of this plan of operating may be followed: the anterior face of the uterus may be bisected, and the cervix divided horizontally, and the uterine vessels caught; then the rest of the uterus may be carefully divided up its posterior surface in a direction from the cervix toward the fundus. The relations to the rectum are examined as the division is made, and at any point where it seems necessary a piece of the uterine tissue may be left adherent to the bowel. After the bisection the rest of the enucleation is effected as described above.



FIG. 5.

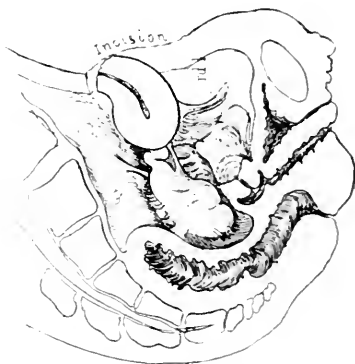


FIG. 6.

FIGS. 5 and 6 show, in a case of pelvic inflammatory disease (Fig. 5), the ease with which the uterus can be bisected and inverted (Fig. 6) and removed without traction on the lateral inflammatory mass.

Where the uterus is retroflexed, with the fundus low in the pelvis and the cervical end thrust up near the symphysis and more easily accessible than the fundus, this procedure may be adopted: The uterus is caught at any convenient point on its anterior face and drawn up toward the incision, the vesical fold of peritoneum is divided and pushed down, and the cervix exposed and caught with two museau forceps, one above and one below. As the cervix is then drawn up toward the abdominal incision it is cautiously divided across its axis, completely severing the vaginal from the corporeal portion. As the ends are pulled apart the uterine vessels are exposed and clamped in the interval; by pulling up the upper end they can be clamped at a higher level more away from the ureter. The

uterus may then be bisected from below upward and removed as already described, or it may be removed *en masse* by clamping off the round ligament and the cornu first on one side and then on the other.

I have had abundant opportunity to demonstrate the practical value of this method of treatment in my clinic this year.

In one case (April 12, 1900) the uterus, tubes, and ovaries were so densely adherent that an effort to free them by the vaginal route failed, when I opened the abdomen, and caught

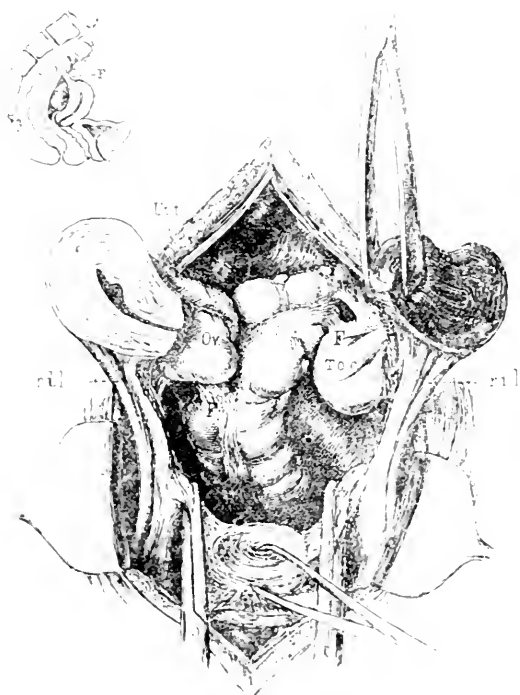


FIG. 7 shows the condition found in Case 13 (p. 827), in which there were fistulae from uterine tubes leading into the sigmoid flexure and rectum. The bisected uterus is lifted completely outside the abdomen.

the uterus by its cornua, and bisected it half-way down the cervix, and then removed each half uterine body; then, with a maximum space under sight and touch, the tubes and ovaries were dissected out.

In another instance (May 5, 1900) the entire uterus was bisected and removed, and after its removal a large pelvic abscess was extirpated on the right side.

In a case operated upon November 7, 1900, the sigmoid on the left and the rectum on the right were the seat of *fistulous*

openings into the uterine tubes. Here the fistulæ and other complications did not have to be treated until the uterus was divided and brought out into the surface.

Another patient in my private hospital had *tubercular disease of both tubes* (April, 1900), which was removed with a bisection of the uterus.

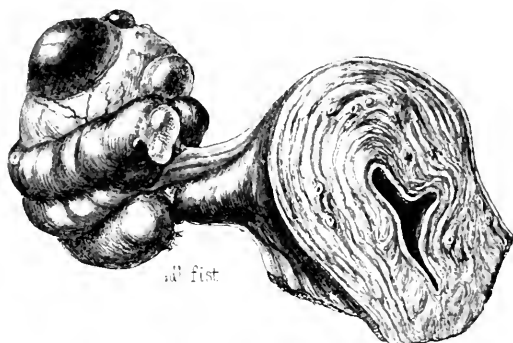


FIG. 8.

In one instance (October 17, 1900) there were extensive *hematomata of both ovaries*, with dense adhesions, and a most difficult enucleation was rendered safe by bisection.

In a case of a large *cancerous right ovary* (May 19, 1900) extending into the pelvic cellular tissue, I found a bisection

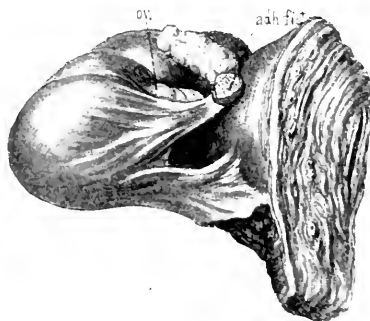


FIG. 9.

FIGS 8 and 9 show the halves of the uterus from Case 13 with the attached uterine tubes and ovaries. The points of fistulous communication are noted on the drawings.

most helpful in clearing out the pelvis and exposing the disease on its median and under sides, and so making possible a much completer enucleation.

The dangers of the method are those of any novel procedure, and must arise for the most part from want of due attention to the details. For example, one can by reckless cutting divide

the uterus obliquely so as to cut directly into the broad ligament among the uterine vessels, instead of following the uterine canal and making a true coronal section. Again rashly cutting, one can divide one half of the cervix and divide the uterine vessels at the same time, with frightful hemorrhage; by clamping the bleeding uterine vessels in an indiscriminate fashion the ureter may be easily included in the clamp.

I suppose, too, that it is easily possible, with sufficient carelessness, to cut a hole in the bladder.

The risk of sepsis from opening the uterine cavity is practically *nil* if gauze is packed in around the uterus; furthermore, the study of great numbers of these uteri has shown that the infection rarely ever lingers in its cavity.

The advantages of a bisection and enucleation of the uterus, as a preliminary to a complete enucleation of uterine tubes and ovaries for pelvic inflammatory and other diseases by the abdominal route, are briefly recapitulated:

Additional space for handling adherent adnexa afforded by the removal of the uterus.

Great increase in facility for dealing with intestinal complications.

Better access, by new avenues from below and in front, to adherent lateral structures.

Elevation of structures to or above pelvic brim, or even out into the abdomen, bringing them within easy reach of manipulation and dissection.

Some advantage in approaching both uterine vessels by cutting from cervix out toward the broad ligament, as is secured in approaching one of them in the continuous transverse incision.

In general, the time of the operation is shortened; its steps are conducted with greater precision; surrounding structures are far less liable to be injured. In this way there are fewer troubles and sequelæ, and the mortality is lessened.

I take it that in intraligamentary tumors of both sides this procedure will prove of the utmost advantage in exposing the tumors at a point low down in the loose cellular tissue of the broad ligament.

It seems to me hardly necessary to point out the transparent differences between the procedure I have just described and the various bisection and morcellation operations by which the uterus is removed through the vaginal route.

In the first place, the avenues of approach differ *toto celo*, and this very difference constitutes the great line of division

in the two gynecological camps, the vaginal and the abdominal hysterectomists. After so much discussion over such confessedly radical differences, I scarcely think we are now likely to declare that, after all, we have been at one.

In the second place, the fundus is first exposed and grasped by traction forceps, and not the cervix.

In the third place, the bisection from above is made in a direction from fundus to cervix, the reverse of the direction taken in the vaginal enucleation; the diversity here could, therefore, scarcely be more marked.

In the fourth place, the cervix is not necessarily bisected or removed.

In the fifth place, the uterine arteries are caught first in the abdominal method, then the round ligaments, and then the cornua.

In the sixth place, the bladder is not detached from the cervix until the uterus is bisected; the reverse is the case in the vaginal operation.

In the seventh place, the lateral inflamed structures are as a rule, in the bad cases, left in by preference and removed after the removal of the uterus.

In the eighth place, with the completion of the section of the uterus, on inverting it with a pair of forceps grasping the cut surface, the body often comes entirely out of the abdomen without any traction whatever on the inflamed adnexa. In the vaginal enucleation the adnexa are hauled upon, abscesses ruptured, and the tissues often extensively torn in the effort to deliver the body of the uterus. In other words, the uterus is at a greater distance from the surface of the body by way of the vagina than by way of an abdominal incision.

In the ninth place, the great advantages of the abdominal operation in the enucleation of the adherent structures with the uterus removed, with abundant light, room, and easy accessibility, contrast most favorably with the more inaccessible structures approached by the vagina. The distance to an adherent tube and ovary in the posterior pelvis by the vagina is much greater per vaginam than per abdomen, not to speak of the large open wound as compared with the narrow canal.

I have had abundant opportunity to demonstrate the practical value of bisection of the uterus in my clinic during the past year, in the presence of numerous visiting physicians, amongst whom I value particularly the critical judgment and approval of Dr. Beverly MacMonagle, of San Francisco.

CASE I.—The first patient, E. W., operated upon November

11, 1899, was an admirable test case for the method. The patient, 32 years of age, had been operated upon in the hospital eight months before for a large pelvic abscess, which was treated by drainage. Since the operation she had gained forty-five pounds and was feeling perfectly well and free from pain. Her only annoyance was a constant yellow free discharge. After a second operation by Dr. G. B. Miller, October 14, 1899, the indurated masses on both sides of the uterus still persisted, and, as the patient lived a long distance away, I thought it better to perform a radical operation before she went home.

The abdomen was opened and the pelvis found choked by the densely adherent tubes and ovaries to the omentum, the bladder, the sigmoid flexure and the small intestine, and the vermiform appendix. The adhesions were so dense that it was thought impossible to sever the masses at the sides from the sigmoid on the left and the adherent loops of ileum on the right, without an extensive injury of the bowel.

The following plan of operation was therefore adopted with success: The bladder was dissected away from the uterus, exposing the fundus, when both cornua uteri were caught with stout museau forceps, making traction in opposite direction; the uterus was then slipped into right and left halves from fundus down toward the cervix. A third museau forceps was then applied at the middle of the body of the uterus, releasing the one on the cornu of that side, which was immediately applied opposite to it, releasing the remaining forceps on the cornu. The incision was then continued down until the vesical peritoneum was reached; on cutting a little behind this, it stood tense across the incision and was easily detached from the uterus by a pair of blunt scissors slipped under it until it was freed as far as both round ligaments.

The cervix was then caught on each side with museau forceps, applying them again in a manner just described. The cervix was then pulled up and the left side cut through until the tissues began to separate, exposing the left broad ligament and the uterine vessels. The vessels were clamped and the uterus inverted and brought completely out of the abdominal incision. At this point the round ligament and the cornua uteri were bunched together and easily controlled by a clamp, and the left half of the uterus removed.

The right side of the uterus was removed in a similar manner, with the increased advantage of the additional room afforded by the removal of the left half.

A large pus sac on the left side was now tapped and about

150 cubic centimetres of greenish, sour-smelling pus withdrawn. Two large collections of encysted peritonitis were next evacuated in the posterior part of the pelvis.

The enucleation of the left half of the uterus, with the sac made up of the densely adherent ovary and tube, was then begun from below and in front, and the mass rolled up and out by slow dissection with the fingers.

The right side was more easily freed from below upward, beginning the enucleation at the pelvic floor, after the removal of the left side. Posteriorly strong adhesions were found between the right tubo-ovarian mass and the vermiform appendix.

In this way the enucleation of this most difficult, densely adherent pelvic inflammatory mass, including the densely adherent uterus with the tubes and ovaries, was accomplished without any injury to the bowels, which would have been extensively torn by the ordinary method of enucleation from above downward.

The vermiform appendix was dug out from a mass of adhesions and found short and bent on itself; the base of the appendix was attached to a hard area of thickened cecum extending about 2 centimetres away from and up to the ileocecal valve. This whole cecal area was amputated with the appendix and closed by fine silk sutures in two layers. A curious mass of polypoid bodies was found protruding from the appendix to the cecum.

CASE II.—The second case, E. R., a patient of Dr. Small, of York, Pa., was a woman 31 years of age, operated upon January 10, 1900. The uterus was in retroposition, fixed by inflammatory masses involving the tubes and ovaries on both sides.

A median incision was made through the fat abdominal walls and the uterus found retroflexed, with both tubes and ovaries densely adherent to the uterus, the rectum, the pelvic walls, and the floor of the pelvis. In addition to the inflammation involving the tubes and ovaries directly, there were several sacculated collections of fluid behind the uterus.

The enucleation of the diseased masses was effected by grasping both uterine cornua with stout traction forceps and bisecting the uterus down into the cervix. The bladder was then pushed down and the left half of the uterus cut across, and the uterine vessels caught with a clamp. The round ligament was then tied and cut, and the ovarian vessels tied and severed at the cornu, removing the left half of the uterus.

The right half of the uterus was next removed in the same manner. Both lateral inflammatory masses were thus left to be removed after securing the advantage of the abundant room and better exposure resulting from the removal of the uterus. Ligatures were substituted for the clamps on the uterine vessels; the cervix was then sutured with catgut.

The tubes and ovaries were now enucleated, beginning anteriorly at the base of the broad ligament. The last step in the operation was to draw the vesical peritoneum over the cervix, after which the abdominal wound was closed without drainage.

The patient made an uninterrupted and perfect convalescence.

CASE III.—The third case, M. W., a negress, age 23 years, had a pelvis filled with an inflammatory mass filling the right side and thrusting the uterus to the left.

The operation, done March 12, 1900, showed the presence of a right tubo-ovarian abscess with left salpingitis and peri-oöphoritis, buried in extensive adhesions.

The median incision, 12 centimetres long, exposed a peritoneal cavity containing a bloody serum and engorged intestines; the enucleation was effected by bisecting the uterus and securing first the uterine vessels and then removing the uterine body as described. The enucleation of the abscess was incomplete, as it had extended beyond the uterine structures, leaving a necrotic area on the floor of the pelvis. A gauze drain was packed over this and brought out into the vagina.

The patient made an excellent recovery.

CASE IV., L. L., age 23, a patient of Dr. Downey, of Roanoke, Va., had an anteфлекed uterus, lying in front of a hard, inflammatory mass which filled the posterior pelvis and Douglas' cul-de-sac.

The operation was performed March 26, 1900, disclosing a right ovarian abscess, and general peritonitis choking the pelvis.

The uterus, tubes, and ovaries were removed through an incision 14 centimetres long. The masses were found choking the pelvis and covered by edematous tissue, but without any adhesions to the small intestines. A little islet of the fundus of the uterus could just be seen in front; on the left side a tortuous tube apparently concealed an ovary beneath it, while on the right side there was a large abscess mass plastered against the pelvic wall and projecting up above the brim of the pelvis.

The operation was begun by freeing the top of the uterus, so as to bring into view the right and left cornua, which were then grasped with stout forceps and drawn up, exposing the anterior face down to the vesical reflexion. The uterus was then bisected well down into the cervix, the vesical peritoneum detached, and the bladder pushed down, after which the cervix was further split to a point just above the vaginal wall. After grasping the uterus afresh at the lowest point of the cut surfaces, the cervix was divided on the left side and the left uterine vessels exposed and clamped. The uterus was now inverted, exposing the adherent left tube and ovary, which were freed on their median surface, dissected out, and removed together with the left half of the uterus. This complete extirpation of the left side afforded a great advantage in dealing with the more adherent and dangerous right side, which was now removed by dividing the cervix and pulling up the uterus until it remained attached only by its cornu. With the removal of the right half of the uterus, part of the abscess cavity, which was densely adherent to it, came away also.

The pelvis was now perfectly clear and open for the most difficult step of the operation, the dissection of the densely adherent right tubo-ovarian mass, which was next effected with surprisingly small amount of hemorrhage and damage to the surrounding structures. Ligatures were next applied in place of forceps to all the remaining vascular trunks and round ligaments. On the left side the ureter was found bared below the brim of the pelvis and about twice the normal calibre.

On the floor of the pelvis was a burrowing area covered with granulation tissue which could not be cleaned out; for this reason the cervix was split posteriorly all the way into the vagina and about one-quarter cut away on either side. The pelvis was then filled with a loose gauze drain leading through the cervix into the vaginal vault. The abdominal wound was closed entirely with interrupted silkworm-gut sutures.

The patient made an excellent recovery, with the exception of a small abscess which formed around a portion of the silkworm-gut sutures accidentally left in the abdominal wall.

CASE V. was a black woman, 24 years of age, operated upon April 11, 1900.

The pelvis was filled by an inflammatory mass, principally located on the left side, extremely tender, and embedding the uterus so that the fundus could not be outlined.

The pelvic genital organs were extirpated through an abdominal incision. The ovarian vessels were tied first above the brim of the pelvis, then the friable uterus was caught by museau forceps and split down into the cervix. On dividing the cervix on the left and right sides successively, the uterine vessels were clamped at a point rather higher than the division.

On raising the right half of the uterus a large abscess was ruptured, with the escape of about fifty cubic centimetres of watery, yellow pus; this was followed by the immediate removal of the mass. After clearing out the uterus and the inflammatory masses, the ragged pelvis was shut off from the abdominal cavity by drawing the vesical peritoneum over the area and attaching it to the rectum and to the pelvic walls on the sides. An abundant gauze drain was placed in the pelvis below the peritoneal lid and leading into the vagina.

Two days after the operation the patient's temperature reached 104.3° F. and her pulse 150. There was considerable oozing from the vagina and no leucocytosis. Fearing a general peritoneal infection, the abdomen was reopened; the peritoneum was smooth and shining, the omentum lightly adherent along the abdominal wound; there was no effusion and no sign of suppuration. A drain was laid through the lower part of the abdominal wound and the incision closed. The patient made a recovery with a gradual defervescence.

CASE VI., M. T., age 39, was a sufferer from frequent intense headaches, and more or less constantly invalidated by attacks of abdominal pain attended by fever. The uterus was found anteфлекed, limited in mobility, and on the left side of it there was a hard, fixed, slightly fluctuating mass, pressing also upon the rectum and constricting its lumen, so that the finger could barely be introduced.

The extirpation of the uterus and inflammatory masses filling the pelvis was complicated by the dense adhesions to all surrounding structures, including the rectum.

A vaginal incision was made, evacuating sacs full of fluid.

The abdomen was then opened, and the top of the uterus just seen in front of the large fused inflammatory masses. The cornua were caught by museau forceps and pulled up, and the uterus bisected well down into the cervical region. The left side of the uterus was then enucleated, and after this the right side, affording abundant room for the extirpation of the adherent tubes and ovaries. The large raw area in the pelvis was drained with a washed-out iodoform drain pack leading

into the vagina. The abdomen was closed with interrupted silkworm-gut sutures. The patient made an excellent recovery.

CASE VII., E. S., age 16, had an extensive uterine, tubal, and peritoneal tuberculosis. The abdominal enucleation of the uterus, tubes, and ovaries by bisection greatly simplified the otherwise extremely difficult enucleation.

The patient made an excellent recovery. The abdomen was closed without drainage.

CASE VIII., W., May 5, 1900, was also one of general posterior pelvic inflammation with a large abscess on the right side and a retroflexed uterus, the fundus of which was buried beneath adhesions to the rectum.

The method of enucleation adopted here was to free the prominent vesical peritoneum and push it down so as to expose the cervix, which was then caught low down between two museau forceps, one above the other. The cervix was then divided from side to side, and in pulling apart the vaginal and the uterine ends the uterine vessels were exposed and caught. It was then easy to pull the uterus up into the incision, completely inverting it and freeing it as far as the cornua. The left tube and ovary were then freed and removed with the uterus, leaving *in situ* the more difficult suppurating right side.

The right tube and ovary were then enucleated by a slow, careful dissection, with abundant light and room, without injury to any of the adjacent structures.

CASE IX., Mrs. A. R., age 41, a patient of Dr. Ransom, of Harper's Ferry, who found in the pelvis a tumor the size of an orange. This had caused no pain, hemorrhage, or discharge, but as the patient had been in poor health for many years, Dr. Ransom advised an operation.

On opening the abdomen through a median incision I found the pelvic organs entirely hidden by an adhesion of the omentum to the bladder. After this had been freed a parovarian cyst, 7 centimetres in diameter, was found on the right side, to which the right tube and ovary were densely adherent. The left lateral structures were also firmly adherent, while the rectum was attached to the uterus and to the cyst by old fibrous adhesions.

I now caught either cornu with heavy traction forceps and bisected the uterus as far as the vesico-uterine attachment of the peritoneum. After freeing this and pushing the bladder out of the way, the left half of the uterus and left appendages

were removed, the left uterine artery having been tied close to the ureter. The right ovarian and uterine arteries were then tied, after which the remainder of the uterus was removed without hemorrhage. This left only the cyst and right appendages to be removed. The cyst was collapsed by aspiration, incised, and its lining membrane stripped out. In endeavoring to separate the rectum from the cervix and cyst, the gut was opened for a distance of two centimetres. This was closed by two layers of fine silk sutures.

The right tube and ovary were now removed, and the appendix, being bound up in adhesions, was also taken out. A liberal gauze drain was placed over the raw area on the right side and its end brought out through the cervical opening. The abdomen was closed with interrupted silkworm-gut sutures.

Following operation there was persistent nausea, with a pulse rate of 160 for several days, necessitating repeated lavage. On the seventh day there was a fecal discharge per vaginam, but this ceased completely on the twenty-eighth day, and the final result was excellent.

CASE X., that of M. B., a large woman aged 52 years, was a particularly difficult one. For about eight months Mrs. B. had been suffering with continuous dull, aching pains in the lower part of the abdomen and obstinate constipation. These symptoms were associated with a swollen abdomen, which had gradually increased in size to that of a full-term pregnancy. The hemoglobin registered fifty per cent.

The diagnosis of large cysto-carcinoma of the ovary was made and operation advised.

On opening the abdomen the dark surface of a cyst was seen, plastered on the left anterior surface of which was the uterus, which had been lifted entirely out of the pelvis. By evacuating 2,550 cubic centimetres of dark, watery fluid the cyst was completely collapsed, the thick-walled, flaccid mass drawn out of the incision and its relations studied. It was found to have a base occupying practically the whole pelvis and to be densely adherent to the uterus, rectum, and pelvic walls. In attempting to separate the cyst wall from the rectum an irregular tear 6 centimetres long, extending down to the mucous coat of the bowel, resulted. Seeing that it would be impossible to proceed in this manner, I determined to bisect the uterus, thus getting rid of the left half and obtaining more room in which to deal with the more difficult right side. The

left side, with the lateral structures, was removed as in the other cases, tying first the uterine, second the ovarian, and third the cornua. The right half was also removed in a similar manner, leaving the cyst densely adherent in the pelvis.

After a long, slow dissection the mass was removed.

In doing this the right ureter, enlarged to twice its normal calibre, was bared for a distance of 10 centimetres, but was not injured.

There were no secondary masses in the omentum, pylorus, or elsewhere.

After bringing the edges of the cervix together and closing over the peritoneum, the abdomen was closed with silkworm-gut sutures, without drainage.

The convalescence was uninterrupted and uneventful.

CASE XI., Mrs. L., a patient of Dr. White, of Wilmington, Del., operated upon June 20, 1900, had an extensive pelvic inflammatory disease, with a tubo-ovarian abscess on the left and a right hydrosalpinx.

I began the enucleation by trying to strip out the left tube and ovary. These were freed from their bed as far as the pelvic floor, but at this point and anteriorly the adhesions were so dense that it was not safe to persist.

By bisecting and first removing the right side I was able, with the advantage obtained by increased space for working, to free the left side and safely remove the structures.

CASE XII., Mrs. M. B., age 32 years, was referred to me by Dr. L. C. Bean, of Gallipolis, O. For two years she had had persistent dragging pain in the abdomen with attacks of severe cramps. On vaginal examination large cystic ovaries were felt on either side and the uterus was firmly fixed in anteversion.

On opening the abdomen through a median incision 10 centimetres in length, a hematoma was found in each ovary, the cysts being densely adherent to each other, to the posterior lower part of the uterus, and to the pelvic walls and rectum. The tubes were free.

On account of the dense adhesions and the lack of room, even after the hematomata were emptied, a bisection was determined upon. This was accomplished, as in the other cases, by splitting down to the cervix, then across, clamping first the uterines and then rolling the bisected uterine bodies upward and outward, and clamping the ovarian vessels. Ligatures were substituted for clamps on the uterine vessels

and round ligaments, leaving only those on the ovarian vessels. This gave ample room for dealing with the cysts, which were, however, removed with considerable difficulty. The ovarian vessels were then ligated and the abdomen closed.

The convalescence was rapid and satisfactory.

CASE XIII., M. W., age 33, illustrated in a most interesting manner the superiority of bisection over ordinary methods of enucleation. The operation, performed November 7, 1900, was done for general posterior pelvic peritonitis with a retroflexed uterus, and fistulæ leading from left and right uterine tubes into the sigmoid flexure and the rectum respectively. (See Fig. 7.)

The uterus was exposed through an incision twelve centimetres long, caught near each cornu with forceps, and incised down into cervix. The left side was then cut across, exposing the uterine vessels, which were caught with forceps. The left half of the uterus was then completely removed, and following this the right half on each side with the adherent fistulous tubes and ovaries, which were dealt with in the abundant room left by the inversion of the body of the uterus. The openings in the rectum were cut out and the bowel closed with fine silk suture in two rows. The cervix was then closed and the vesical peritoneum drawn over the stump.

In amputating the uterus in the cervical portion on both sides, care was taken to extend the cut upward, parallel to the broad ligament, in such a way as to catch the uterine vessel at a higher level ("sniping"). The abdomen was closed and no drain was used throughout. The patient has made an excellent recovery, and has since been transferred to the general surgical department for a swollen knee, noted upon her entrance into the hospital.

Note.—Since completing my article, I have fortunately found the brief but clear account of Faure (Paris)¹ of his method of treatment of uteri with adherent or suppurating adnexa by median section (*l'hystérectomie abdominale totale par section médiane*), which covers the method just described in its most important particulars. If there is any merit, therefore, it belongs as a matter of prior right to Faure. He further says: "Ce procédé, qui n'est applicable que lorsque le volume de l'utérus n'est pas trop considérable, trouve ses indications principales dans le cancer de l'utérus et surtout dans les suppurations annexielles." My own independent discovery of this method came, curiously enough, in quite an opposite

¹ *Revue de Chirurgie*, 1898, xviii., 1136.

LIST OF BISECTION CASES.

No.	Name.	Date of Operation.	Disease.	Operation.	Result.
1.	E. W.	Nov. 11, 1899.	Appendicitis. Extensive pelvic peritonitis. Large left pelvic abscess.	Bisection followed by removal of densely adherent vermiform appendix.	Complete recovery.
2.	E. R.	Jan. 10, 1900.	Retroflexed uterus. Tubes and ovaries involved on both sides in inflammatory masses.	Bisection. Removal of uterus followed by enucleation of diseased masses.	Uninterrupted and perfect convalescence.
3.	M. W.	Mar. 12, 1900.	Inflammatory mass filling right side of pelvis. Right tubo ovarian abscess with left salpingitis and periophoritis.	Bisection and removal of uterus followed by extirpation of abscess.	Excellent recovery.
4.	L. L.	Mar. 26, 1900.	Anteflexed uterus. Right ovarian abscess. General pelvic peritonitis.	Bisection and removal of left tube and ovary with uterus. Separate dissection of densely adherent right tubo-ovarian mass.	Excellent recovery.
5.	M. B.	April 12, 1900.	Pelvic inflammatory mass embedding uterus.	Bisection and enucleation of large right abscess with the uterus. Peritoneum stitched to rectum.	Recovery.
6.	M. T.	April 21, 1900.	Anteflexed uterus. Pelvic inflammatory masses.	Bisection. Extirpation of uterus, followed by removal of right and left inflammatory masses.	Excellent recovery.
7.	E. S.		Uterine, tubal, and peritoneal tuberculosis.	Bisection and easy removal in a difficult case.	Excellent recovery.
8.	W.	May 5, 1900.	Retroflexed uterus. General pelvic peritonitis. Right pelvic abscess.	Side to side bisection of cervix. Body of uterus not bisected.	Recovery.
9.	A. R.	May 19, 1900.	Parovarian tumor on right. Inflammatory mass on left.	Bisection. Removal of adherent vermiform appendix.	Excellent recovery.
10.	M. B.	May 19, 1900.	Large cysto-carcinoma of ovary.	Bisection of uterus and enucleation.	Uninterrupted recovery.
11.	L.	June 20, 1900.	Extensive pelvic inflammation. Left tubo-ovarian abscess. Right hydrosalpinx.	Bisection and enucleation first of right then of left side.	Recovered.
12.	M. B.	Oct. 17, 1900.	Anteflexed uterus. Extensive pelvic inflammation. Large hematoma of both ovaries.	Bisection. Tumors removed after the uterus.	Rapid convalescence.
13.	M. W.	Nov. 7, 1900.	Retroflexed uterus. Dense posterior pelvic peritonitis. Sigmoid and rectal fistulæ.	Bisection and enucleation of tubes and ovaries after extirpation of uterus.	Excellent recovery.

manner. I first was forced to bisect a large fibroid uterus in order to hastily terminate a most dangerous operation; then, after treating fibroid uteri in this way, I ventured to apply the method to minor (in size) affections. I differ from Faure in treating suppurating affections in that I do not detach the bladder as a preliminary step, but in the course of the bisection; nor do I, as a rule, bisect into the vagina, but prefer to amputate the cervix above the vaginal vault, first on one side, then on the other, and to remove the cervix later if necessary. I do not, as a rule, try to remove the adherent tubes and ovaries with the halves of the uterus.

The splitting of the anterior wall of the uterus and the bisection of the posterior wall from below upward, as well as the transverse division of the cervix, as done in Case 8, are, so far as I know, entirely my own methods.

A CASE IN WHICH SEXUAL FEELING FIRST APPEARED AFTER REMOVAL OF BOTH OVARIES.

BY

A. LAPTHORN SMITH, M.D.,

Surgeon-in-Chief of the Samaritan Hospital for Women, and Gynecologist to the Montreal Dispensary, Montreal, Can.

THIS case presents some unusual features which I have not seen recorded in any of my reading, nor even in a cursory search through a dozen of the standard text books, so that a short report of it may be of interest. As the patient does not wish me to disclose her identity, I will neither give her initials nor the name of her family physician, who kindly sent her to me on June 13, 1897.

She was a bright-eyed, red-lipped, but hollow-cheeked woman of 26 years of age, who had never menstruated; been married seven years, but never been pregnant. But though she had never lost a drop of blood from the vagina, she suffered from, if I might so term it, dysmenorrhea of the severest description, being obliged to take to her bed for several days out of every month, during which time her abdomen and breasts became swollen and painful.

Her characteristics were exceedingly feminine, her breasts being unusually large, her voice being soft and sweet; there

was the usual amount of hair on the pubes, but not a trace of it on the lips or chin. As a rule the swelling of the breasts and abdomen went down after a few days, but for three months before coming to see me the swelling of the abdomen had remained constant. Every month when the flow should have come on there was instead a moderate white discharge from the vagina. Her bowels, which were never very regular, were especially constipated at this time, when they would go as long as a week without a movement, and even then only by the aid of a purgative.

She also stated that during two days in every month there was either total suppression or retention of urine, although when she came to me the examination of the urine showed nothing abnormal.

As she was perspiring profusely at night, I naturally thought of tuberculosis and made a careful examination of the lungs, but discovered nothing but a slight increase in the length of the expiratory murmur, and she had no cough.

During the two days she should have been losing she suffered from excruciating pain in the back and down the thighs.

When I came to inquire into the condition of the sexual relations I found that this was a very sore subject, for during the whole of the seven years of her married life she had not only never once experienced the slightest pleasure, but had, on the contrary, suffered so much pain that she had the greatest dread of her husband coming near her—so much so, indeed, that she refrained from showing him the slightest sign of affection.

On bimanual examination the uterus was found to be normal in size and position, but both ovaries were low down and the right one was enlarged. They were both very tender to the touch. The cervical canal was small and very tender to the passage of the sound, which entered two and one-half inches.

As a rule I have always tried to strengthen weak organs rather than to cut them out; but considering that she had been under medical treatment for all those years, and that her married life had been so unhappy both for her husband and for herself, I thought that I would serve her interests best by operating at once and removing the ovaries and tubes, which so far had been of no use to her and had caused her so much suffering. Accordingly a few days later I removed the ovaries by abdominal section at the Samaritan Hospital for

Women, experiencing no difficulty at the operation and no drawbacks in her recovery, and she went home in four weeks.

I received a visit from her three months later, when I made the following note:

September 4, 1897: Patient feeling splendidly. Has gained six pounds in weight, but still dreads sexual intercourse. My next note was on December 18, 1897: Has gained nineteen pounds; never felt so well in her life; can do anything now, including her duty to her husband, without inconvenience. I did not see her again for a year, when I was called to see her at the hotel and found her suffering from retention of urine, due to having retained it all day while out shopping. She was made much worse by having taken a glass of hot gin and water. While I was drawing off a large quantity of water with the catheter, she told me that her feelings had undergone a great change since her operation, and that she now experienced the most ardent sexual desire, although she had no signs whatever of menstruation.

Thinking that the case was sufficiently uncommon to be of interest, I wrote to the lady's husband to call and see me, in order to confirm her statement before reporting the case. This he kindly did a few days ago, when he told me that he was now one of the happiest of men, that his wife was in perfect health and spirits, and that, although more than three years had passed since her ovaries were removed, her sexual feelings were beyond the average. He had been told that the operation would be followed by a masculinization of her figure and character, which statements in his wife's case had proved entirely untrue.

I have often intended to report a number of cases in which increased sexual feeling had followed the removal of the ovaries and tubes, and one case in which the uterus had been removed as well, but have postponed doing so for want of time. In some of them the sexual feeling has lasted now for several years, and in two cases the women have even become aggressive. I therefore believe that it is by no means the rule that sexual feeling disappears with the removal of the ovaries. The experience of most abdominal surgeons will bear out the statement of Lawson Tait:¹

"A woman who has suffered for years from chronic ovaritis with adherent tubes is necessarily barren, so that to remove

¹ Tait: "Pathology and Treatment of Diseases of the Ovaries." Fourth edition, William Wood & Company, New York, p. 93.

the uterine appendages is to make her no worse than she was. But such a disease as this will oblige her to suspend marital relations or to endure them only as a matter of duty and with great suffering. To remove her diseased structures is to enable her to satisfactorily perform her marital duties, and the operation, if successful, will be found really to reinstate her in her sexual functions, and not to unsex her."

Certainly my own experience bears out this observation, which explains why so many women on whom I have operated, who had never experienced any sexual feelings while their ovaries were in, have felt them strongly since their ovaries are out.

250 BISHOP STREET.

REMARKS ON THE TECHNIQUE IN DEALING WITH THE PEDICLE
IN THE REMOVAL OF INTRAPELVIC GROWTHS AND
STRUCTURES.

BY

RICHARD R. SMITH, M.D.,

Surgeon to Butterworth Hospital, Grand Rapids, Mich.

DURING the past two years a considerable number of cases have come to my notice in which I believe an improper treatment of the pedicle in work upon or involving the appendages has led to unpleasant results. These women had all been operated upon and a tumor or diseased tubes and ovaries (a part or all) had been removed. It has brought forcibly to my mind the necessity of a proper technique in removing pelvic structures or growths, if we are to expect to prevent in our patients those unpleasant after-symptoms which have spoiled so many otherwise satisfactory results.

The faults usually committed are three:

1. Use of silk.
2. Ligating tissues *en masse*.
3. Leaving too short a pedicle.

In consequence we have left a condition about the stump which results in persistent pain, rendering the patient often more miserable than the original disease.

1. Use of silk. Silk has been replaced by catgut in the hands of most operators. It may be securely tied with a little more readiness than catgut, but care in tying the latter makes

it equally as safe as silk. The use of enormous silk ligatures for the securing of vessels the size of the ovarian or uterine seems entirely uncalled for. The fistulæ which have followed the use of these ligatures have been not only a source of distress, but have been the cause of death in not a few instances where operations have been undertaken for their removal. Aside from this, silk ligatures add greatly to the induration and adhesions about the stump, and so cause pain.

2. Next to the use of silk in its bad effects comes the method of including in the ligature large masses of tissue. This may be not only a cause of many dense adhesions, but by drawing together the structures of the broad ligament the uterus may be displaced.

3. In removing tumors it has commonly been the habit of most surgeons to tie off the pedicle close down to its origin. In doing this considerable tissue has been drawn together, the broad ligament has been shortened, and in consequence the uterus eventually drawn from its normal position. When the pedicle is very short or when there is really no pedicle at all, by cutting close to the tumor, puckering of the tissues may be avoided, the bleeding controlled by ligatures applied to the blood vessels alone, and the raw surface covered by drawing the adjacent peritoneum over it with a running catgut suture. When the pedicle is long, by tying in small sections close to the tumor, tension is avoided and bleeding more safely controlled.

The following cases will help to illustrate these ideas, showing in the first the results of the above-mentioned faults in technique, and in the rest what may be accomplished by proper methods. Only such parts of the histories and operations are given as shall have a bearing upon the subject under discussion.

CASE I.—Miss C., age 23. Patient had been a sufferer for about three years until six weeks ago, when she was operated upon and a small ovarian tumor removed. Her pain increased after the operation. An examination showed the fundus of the uterus to be displaced to the right and the whole organ more or less immovable. There was considerable thickening on both sides, especially the right. Owing to the result of the examination operation was advised. The abdomen was opened (June 26, 1899) and many dense adhesions were found about the stump on the right side. The omentum and cecum were separated with considerable difficulty from the mass and two

interlocking ligatures of heaviest silk removed. The adhesions were broken up until the uterus could be drawn into its normal position. The adhesions on the left side were broken up, the ovary and tube found to be normal and allowed to drop back into the abdomen. Patient left the hospital at the end of three weeks very much improved.

CASE II.—Miss C., age 31. Patient with a history of repeated pelvic abscesses discharging into the vagina. Operation was advised and carried out on September 11, 1899. The tubes and ovaries on both sides were loosened from the cul-de-sac and the adhesions separated. The tubes, thickened to the size of one's forefinger, were removed in the following way: The end of the tube was grasped at its outer end and the tube severed from its attachment by cutting close to its under side. The slight oozing was controlled by a running catgut suture. The ovaries, aside from their adhesions, were normal and were left *in situ*. Recovery was uneventful, and when she went home, four weeks later, she was wholly free from pain. Reports since then show her to be entirely well.

CASE III.—Miss T., age 18. Two attacks of pelvic peritonitis, from the last one of which she had not fully recovered. There was still some little temperature at evening, and she had not been out of bed eight weeks from the beginning of the attack. Abdomen was opened October 8, 1899, and the right ovary and tube loosened from a dense mass of adhesions. The tube, considerably thickened, but containing no pus, was peeled from the top of the broad ligament, it being unnecessary to do any tying except at the cornua. In digging the appendages out on this side, the attachments of the ovary were so ruptured as to make its removal seem best. The ovary was easily peeled out without ligature. The tip of the left tube was adherent in the cul-de-sac; it was released, and, being otherwise normal, it was left in position, as was also the ovary on that side. Recovery was uneventful, except that the abdominal wound suppurated. This patient was absolutely relieved of pain, and when heard from a year later was in perfect health.

CASE IV.—Mrs. C., age 36. Operation November 3, 1899, for the removal of cystic tumor in left pelvis. Tumor sprang from the left broad ligament; no pedicle. The tumor was peeled slowly from the posterior surface of the broad ligament. Slight bleeding except from the ovarian artery, which spurted when it was cut. This was ligated with catgut. The raw surface was completely covered in by running catgut suture.

This woman left the hospital completely free of pain, and has since been well.

CASE V.—Mrs. K., age 22; no children. Operation June 14, 1900. Ovarian cyst. After the abdomen was opened the cyst, reaching above the umbilicus, presented. This was evacuated and the cyst brought through the abdominal wound. The pedicle was long. It was tied off with interrupted catgut sutures, the ligatures being placed close to the tumor. Recovery was uneventful, and patient was well and suffering absolutely no pain several months later.

A CASE OF CONGENITAL VENTRAL HERNIA.

BY

EUSTACE L. FISKE, M.D.,
Fitchburg, Mass.

(With illustration.)

ON the 25th of June last I was called to attend Mrs. N. in confinement. She was in labor at the time of my arrival, and the case progressed normally till the birth of the child about two hours later. As the head presented at the vulva I noticed it was deeply cyanosed, a condition which increased as the birth progressed. The child was very dark when born. Thinking the cyanosis due to pressure on the cord, I hastened to deliver the body, but found difficulty in doing so because of shortness of the cord, which measured seven inches in length. I tied and cut the cord immediately just outside the vulva of the mother, not being able to draw down more of the cord. The child quietly gasped twice and died, became limp and darker in color. It was a healthy female of seven pounds, measuring nineteen inches in length, normal in every respect except for a large tumor in the anterior abdominal wall. This tumor occupied the area in the median line from the child's umbilicus to just below the sternum and laterally to complete the circle, the circumference of which was ten and one-half inches. Examination showed this tumor to be made up partly of the abdominal wall, which had failed to unite in the median line in early fetal life, and partly of a thin, transparent membrane extending over the anterior portion of the tumor and

forming the hernial sac. The fissure in the abdomen measured transversely in its longest diameter three inches. Through the thin membrane could be felt the abdominal viscera floating in an abundance of fluid. The cord appeared normal on its under surface and was attached to the child normally. Dissection showed the thin membrane to be made up of the amniotic envelope of the cord, which spread over the peritoneum, and both together filled in the fissure or space between the un-united edges of the abdominal cleft. It was very evident that



the outer layer of this thin sac was continuous with the covering of the umbilical cord. Several nodules of Wharton's jelly were seen on the hernial sac in this thin membrane. The abdominal organs were normal, except that the liver was much enlarged, its left lobe occupying the upper third of this tumor. The child was photographed about twelve hours after death. The dark portion of the tumor represents the thin membrane and hernial sac, and the umbilical cord is shown suspended from the lower portion of it by a string.

The mother's recovery was delayed by two attacks of post-partum hemorrhage, the first soon after the placenta came and the second twelve days afterward. Neither was severe, but caused much anxiety to the mother. The placenta was carefully examined and found to be intact, as well as the membranes.

No cleft palate or other deformity existed in the child. The mother is a Swede, 37 years of age. Her other five children were born in the old country and are all living in perfect health.

20 PRICHARD STREET.

TRANSACTIONS OF THE SECTION ON GYNECOLOGY OF THE COLLEGE OF PHYSICIANS OF PHILADELPHIA.

Stated Meeting, October 18, 1900.

JOHN C. DA COSTA, M.D., *in the Chair.*

DR. EDWARD P. DAVIS reported

A CASE OF RUPTURED TUBAL PREGNANCY.

The case was that of a woman aged 22, who was seen after several hours' illness, giving a very indefinite history. Pregnancy was denied, and no accurate date for the last menstruation could be assigned. The patient had had sharp pain in the lower abdomen at irregular intervals. When seen her pulse was rapid, her temperature subnormal; pallor, shock, and slight tenderness of the abdomen, without great distension, were present. On vaginal examination a doughy resistance was felt upon the left side, and the uterus was pushed over toward the right. The patient was transferred to the Jefferson Maternity, and I operated upon her shortly after admission. The diagnosis of probable ruptured ectopic gestation was made from the signs of hemorrhage and the vaginal examination, with the history, and the decision to operate was based upon the fact that the patient was growing worse.

On section the lower abdomen was filled with fluid blood and many clots were found among the coils of intestine. The pelvis contained a large amount of fluid blood. An attempt to form a clot of any size had been unsuccessful. The left tube was brought up and found ruptured across three-fourths of its extent. Blood was oozing from the tube. The tube was ligated and removed.

Blood was oozing from the pelvic peritoneum, although no one bleeding point could be found. Normal salt solution was poured into the abdomen from a pitcher, as much blood as possible was removed very rapidly, and a Mikulicz gauze

drain was carried to the bottom of the pelvis. The patient received abundant intravenous saline transfusion. She rallied from the operation, the gauze was gradually removed, and the patient made a good recovery. Although the blood clots removed were searched for the embryo, but portions of it could be found.

Two points seemed of special interest in this case: first, the obscurity of the history and the general circumstances of the case, and, second, the oozing of blood from the pelvic peritoneum.

DR. HENRY D. BEYEA reported

A CASE OF RUPTURED EXTRAUTERINE PREGNANCY OPERATED UPON WHILE IN PROFOUND COLLAPSE; RECOVERY.

I have thought that the following case of ruptured extrauterine pregnancy would be of interest to the members of the Section, because it demonstrated the value of, and imperative indication for, operation in these cases, even though the patient be in a condition of profound collapse, pulseless, and scarcely a spark of life remains; also, the imperative need of rapid operation with well-trained assistants, which in this instance certainly saved the patient's life; further, the great value of hypodermoclysis in such cases, nine pints of normal salt solution being injected beneath the breasts within twelve hours.

I was called in consultation by Dr. William R. Nicholson to see Mrs. L. R., housewife, 26 years of age, living in the extreme southern part of the city, early in the afternoon of May 8, 1899. The patient stated that she had always enjoyed good health up to the time of her marriage in 1896. Menstruation began at 14 years of age, was regular, painless, and lasted from three to four days until marriage, since which time the duration had been one week and the flow had gradually become more profuse. She had had no children. She was pregnant in 1898, but aborted at the fourth month. In May, 1898, a profuse hemorrhage from the vagina occurred in the intramenstrual period, which lasted an hour. No ill effects followed, and menstruation again became regular.

Her last menstruation occurred on February 23, 1899. On March 13 she was taken with morning nausea and vomiting, which quickly grew worse, and during the remainder of March she was unable to retain food. About April 1 the vomiting ceased and she began to complain of pain in the left iliac region. It was of aching character, almost continuous, with sharp exacerbations and steadily increasing severity. Two weeks before I saw her the pain became so severe that she was compelled to go to bed. Bleeding from the vagina began at the same time and was still present when she came under observation. Since 7:30 A.M. the pain at times was intense and the bleeding more profuse. The case had been correctly and positively diagnosed by Dr. Nicholson as

extrauterine pregnancy. I found the uterus forward, in good position, enlarged, and the cervical canal patent. An extremely tender mass about the size of a small orange could be indefinitely outlined high up and to the left of the uterus. The abdomen was exquisitely tender on the left side as high as the mid-lumbar region. The history and symptoms, both objective and subjective, were typically those of unruptured extrauterine pregnancy. The pulse and temperature were about normal, she had had no fainting attacks, and although we greatly feared rupture would soon take place, for the sake of our own convenience we deferred sending the ambulance for her until three hours later. In this interval the pain greatly increased; she had fainting attacks, which became more and more frequent and of longer duration, until she was almost continuously unconscious. When brought to the hospital, at about 5:30 P.M., she was in a condition of profound collapse, semi-unconscious, the skin was cold and clammy, a thermometer would not register by the mouth or rectum, and the pulse could not be felt at the wrist. When roused she complained of abdominal pain. There was considerable abdominal distension. She was immediately placed in bed and surrounded by hot-water cans. Whiskey, strychnia, and digitalis were given hypodermatically, and hypodermoclysis begun. There was a slight response to this treatment, so that when placed on the operating table the heart beat, estimated by means of the stethoscope, was thought to be about 180. The temperature was 96° by the rectum.

The abdomen was hastily prepared by scrubbing with soap and water, ether and alcohol, and the abdominal cavity opened, showing a ruptured and bleeding tube on the left side. The rupture was in the superior surface of the outer third of the tube. About a two-months ovum surrounded by chorion was protruding from the opening. The abdominal cavity was filled with fluid blood. The tube and ovary of this side were quickly ligated off, removed, a glass drainage tube inserted to the bottom of the pelvic cavity, and the abdomen closed without irrigation. The operation consumed about ten minutes. Two and a half ounces of ether were given. While on the table she received hypodermatic injections of whiskey, strychnia, and atropine. Oxygen was administered and the hypodermoclysis continued. The external temperature was kept up by means of the electric pad. At the end of the operation the temperature was 96° , heart beat 160, and respiration 40. The patient was in a little better condition than before operation. From the time of admission to the completion of operation three pints of normal salt solution were injected beneath the breasts. During the next twelve hours she received six pints, all of which was quickly absorbed. Stimulation by hypodermatic injection was kept up. An enema of coffee was given; also one-quarter of a grain of morphia after midnight, because of extreme restlessness, and the respirations were reported to be 70. During the first twenty-four hours thirty-six

ounces of pure blood were removed through the drainage tube; during the next twenty-four hours, six ounces.

The patient gradually improved and made a comparatively normal convalescence. She had a little more fever than is usual, probably because of the irritation caused by the presence of blood in the abdominal cavity. The drainage tube was removed on the third day. Four days after operation the hemoglobin, estimated by Dr. William Pepper, was 30 per cent. The red cells were reduced to 1,730,000. The white cells were 18,400.

Another point of interest in this case is the large amount of pure blood (forty-two ounces) removed through the drainage tube within forty-eight hours after operation. As said, at the operation the abdominal cavity was found filled with fluid blood, and it is reasonable to believe that the greater part of this blood was removed through the drainage tube. The patient has since given birth to a child.

The cases of Drs. DAVIS and BEYEA were discussed together.

DR. CHARLES P. NOBLE.—Dr. Davis in his report referred to numerous bleeding points about the abdomen. Before the discussion is opened I would like to ask him to be more explicit on this particular point.

DR. EDWARD P. DAVIS.—The hemorrhage in the case reported was from no point, but from the pelvic peritoneal surfaces.

DR. CHARLES P. NOBLE.—Both these cases are of interest as showing the great change which has taken place in our ability to deal with extrauterine pregnancy. Both would undoubtedly have died some years ago.

In both of these cases drainage was used, which is rather contrary to the tendency of abdominal surgery for some time past. I have been less and less inclined to drain in this condition myself. It is certainly hypercritical to criticise a plan of treatment which resulted so happily in these cases; but, in general, I believe it is far better to rapidly wash out the clots and leave the abdomen full of salt solution, and to close the wound without drainage. The salt solution thus left in is absorbed as rapidly as when put under the skin.

This is one of the few classes of cases where I still use the old-fashioned irrigator—the Tait irrigator. With this instrument but a few minutes are required to wash out the peritoneum, and, if assisted with the hand in taking out the larger clots, the greater bulk of the blood can be removed without handling the intestines. In ectopic cases with much hemorrhage this has been my custom for some years. I think this method gives a better chance for recovery than if drainage is used.

The fact that there were bleeding surfaces in Dr. Davis' case is unusual, unless there has been a mass sufficient to contract adhesions. It is curious that there should have been numerous oozing surfaces in the pelvis in a case operated upon at once after rupture.

The last case which might come under this category which I saw was a patient operated on in the spring. I was called to a neighboring town to see a patient in collapse. She had a very intelligent doctor, who, because she was in collapse and had abdominal pain, thought the case might be one of extra-uterine pregnancy and sent for me. A curious point was that there was no history pointing to pregnancy. The history of the attacks was that for three days she had been taken with an attack of pain on rising in the morning, the pain being in the epigastrium, not in the pelvis nor lower abdomen, and the patient supposed it was due to indigestion. After exercising about the house, the pain, in the preceding attacks, had passed off.

Examination revealed a small uterus, and one tube and ovary perfectly normal. There was no mass on the other side, but a slightly enlarged, freely movable ovary. There was a suspicion of fluid in Douglas' pouch. The determination as to what to do had to be made upon the mere fact that the woman had had attacks of pain for several days and was in collapse, and this was made more difficult because the pain was in the epigastrium. We made the diagnosis by exclusion, as we could see no other reasonable explanation of the collapse. Operation was done promptly and her abdomen was found filled with blood. It was interesting to see that the local conditions were what had been made out by examination. The tube was not enlarged. The ovum had been in the fimbriated end and had escaped by separation of the fimbriae.

The case was of special interest from the standpoint of diagnosis. I have never done an abdominal operation where I felt the sense of responsibility more than in that particular case. Had the diagnosis not been correct, it is hardly necessary to say that the operation would probably have been the cause of her death.

In that case I followed the plan of rapidly washing out the blood, not being particular to get all out. I think it is a mistake in extreme cases to spend much time in trying to make a nice toilet. If we take out the large masses of blood clots, if some fluid blood is left in with the salt solution it does no harm.

DR. W. REYNOLDS WILSON.—It is extremely interesting to me to hear the diverse methods of treatment in respect to the attention to the peritoneum. I understood from Dr. Davis' remarks, and certainly heard from Dr. Beyer's method, that they treated the peritoneum dryly. I want to ask of the experienced operators here what may be the recent practice in this particular method of treatment. I am not sufficiently familiar with it from the surgical point of view to discuss it. From a certain number of Cesarean sections, however, that I have been called upon to perform, I have found that the treatment by sterile salt solution, as Dr. Noble has suggested in these cases, is most effective. In Cesarean section where there is a great amount of hemorrhage and where there is likely to be an accumulation of clots, where the membranes are unduly

adherent and where the patient is greatly shocked, it seems to me that the use of water, both for its detergent and for its stimulating effect, is very important. The clots can be removed more minutely and more rapidly than by the dry treatment.

I believe most firmly in these cases that the retention of the hot saline solution within the abdomen is a very strong method of overcoming shock. I agree with Dr. Noble, if I may be permitted to offer my experience in this respect, that it seems reasonable that the sterile water introduced into the abdomen can be absorbed more rapidly than when introduced by hypodermoclysis, and that the chances of infection from water thus introduced are no greater than by hypodermoclysis.

DR. STRICKER COLES.—The point of diagnosis is particularly interesting to me. I saw another case soon after the one which Dr. Davis reports, which gave all the classical symptoms of ectopic gestation; in the case Dr. Davis reported most of the symptoms were absent. The girl was 22 years of age, and said after the operation that she had been married only a few months, but at the time of examination she denied the possibility of pregnancy. The menstruation was said to have missed one period, which the patient accounted for by having taken a cold bath to defer the flow because she wished to go to an entertainment. She had none of the symptoms of pregnancy; the only thing pointing to the true condition was the shock and depression. On vaginal examination the cervix was found to be softened, the uterus slightly enlarged, and a doughy mass was pushing it down toward the right. There was no history of previous pelvic disease, and the menses were regular except when stopped by cold baths, when they would come on normally after a few days. The causes of ectopic gestation are not well known, and in this case there could be found no apparent cause before or after the operation.

DR. EDWARD P. DAVIS.—Dr. Noble's case was evidently a tubal abortion without rupture of the tube. The fact that free hemorrhage was taking place draws attention to the manner in which the embryo engrafts itself. The study of syncytial growths brings forward the fact that the ovum is capable of grafting itself upon any portion of the intrapelvic tissue, surrounding itself by a very vascular stroma. There was no time to carefully cleanse the pelvic cavity or to wash out the clots from the intestinal coil. While drainage is to be avoided whenever possible, in this case the oozing from the pelvic peritoneum was promptly checked by the use of the Mikulicz drain.

Regarding secondary collapse following irrigation of the abdomen, the following explanation seems reasonable: When a large amount of hot fluid is poured into the abdominal cavity, we profoundly stimulate intra-abdominal circulation, and if the absorbents are active some of the fluid is taken up. Unless, however, the vessels are abundantly filled, there follows what Dr. Beyea has described as secondary collapse. When

intravenous transfusion or hypodermoclysis is freely done, we see less of this secondary collapse, the patient remaining in better condition, because the vessels are abundantly filled with fluid.

DR. H. D. BEYEA.—In my case I did not remove the blood from the abdominal cavity by means of irrigation with normal salt solution, because of the extreme condition of the patient. It is to be remembered that in this case there was the most profound collapse, the heart beats could only be heard by means of a stethoscope, and the slightest added depression would certainly have proved fatal. The first and only indications were to control the hemorrhage and terminate the operation as quickly as possible. I felt that it was distinctly safer to trust to the drainage tube to get rid of the blood. You will note that forty-two ounces of almost pure blood were removed within forty-eight hours after operation, and therefore the drainage tube accomplished all I desired. Further, it has been my experience that irrigation, even though the incision be large, first causes stimulation, but this stimulation is often immediately followed by depression, and thus the patient in some cases is in danger of going into collapse. Here we already had collapse, and just such a depression would have been sufficient to kill my patient. No, in this particular instance I feel irrigation might have easily done the greatest harm. I depended upon the hypodermoclysis, begun at the time the patient entered the hospital, to fill up the blood vessels. In other cases of ruptured extrauterine pregnancy I have operated upon irrigation was always practised, but the patients were in much better condition and the rapidity of operation was not nearly so important a factor.

TRANSACTIONS OF THE NEW YORK OBSTETRICAL SOCIETY.

Stated Meeting, October 9, 1906.

The President, CLEMENT CLEVELAND, M.D., in the Chair.

DR. JOSEPH BRETTAUER showed a

LYMPHOSARCOMA OF THE INTESTINE.

The patient was 38 years of age, had had four children and two abortions. She had always been well, menstruated regularly, and only since six months felt slight pains in the loins and some bearing-down when walking. She was sent to Mt. Sinai Hospital for rectocele and lacerated perineum. On examination a tumor, the size of a fist, was found in the left iliac region; it was freely movable, irregular in shape, in parts fluctuating, in others hard. Connection with the pelvic organs

could not, even in narcosis, be positively excluded. The diagnosis lay between an intestinal and an ovarian growth. On operating through the abdominal cavity on June 27, 1900, the mass was found to be a coil of small intestine uniformly adherent with other coils and omentum. The mesentery was found to be infiltrated and the retroperitoneal glands affected. After resecting about twenty inches of intestine and its mesentery, the diseased glands were with difficulty removed. A Murphy-button anastomosis was established in the usual way. The patient did well apparently for twenty-four hours, but died fifty hours after operation.

The autopsy showed perfect anastomosis; no signs of peritonitis, but signs of hemorrhagic nephritis; no more affected glands were found. The most interesting feature of this case was the entire absence of any subjective symptoms pointing to a disease of such a serious nature.

DR. H. N. VINEBERG presented a

FIBROID UTERUS

which had been removed by supravaginal hysterectomy. Mrs. D., age 34 years, married three years, had a miscarriage about three months after marriage. Then a fibroid growth was detected about the size of a cocoanut. The fibroid continued to grow and gave rise to dysmenorrhea and pressure symptoms. At the operation the uterus, together with the fibroid, was amputated just above the vaginal insertion. Convalescence was complicated by a pleurisy with effusion, but after this subsided the patient made a good and satisfactory recovery. Ever since the operation, regularly every month, she had a slight show lasting about a day. On examination the pelvic cavity was found free of any exudate or thickening. There was nothing to be felt but the small stump of the cervix, the vaginal portion of which seemed perfectly normal. The interest of the case lay in the persistence of the slight menstrual flow, though, as the specimen showed, the tubes and ovaries were removed entirely. What was of further interest in this case was the fact that the patient suffered from the usual phenomena of the artificial menopause, such as hot flashes, etc., though these are growing gradually less pronounced.

DR. RALPH WALDO thought the specimen of lymphosarcoma a very interesting one, and it brought up to him one question which was presented quite forcibly. Seven years ago he removed an ovary which was the seat of sarcomatous disease; he apparently took all the diseased tissue away. The tumor returned. The woman was again operated upon this year. Opening the abdomen, the sarcoma was seen involving the tissues very extensively; the omentum, mesentery, and intestine were involved in the whole mass and were attached to the anterior abdominal wall; the involvement was so general that it became necessary to close the abdomen. The woman feels well and the sarcoma is still there. He thought it was an im-

portant question to settle, how long we could keep the patients from having a return of the disease when the tumor was removed from the abdominal cavity. In his experience cases would run from five to seven or eight years without extensive return of the disease.

DR. H. J. BOLDT, in answer to the statement of Dr. Waldo, stated that we may have a patient living fully as long with sarcoma without any operation at all. He remembered a patient who had been under the care of Dr. Hanks for three or four years and subsequently under his care for about the same length of time before she died. No operation was performed, she being in an inoperable condition at the time when Dr. Hanks first saw her.

Dr. Boldt, in discussing the specimen presented by Dr. Vineberg, said he would not consider "menstruation" the proper name to apply to bleeding after such an operation had been performed. A sanguineous discharge had been observed by many, although not at such regular intervals as in the instance of Dr. Vineberg's patient. In reference to the statement alleged of Zweifel, that patients would not suffer to such a degree at the menopause if a small portion of the cervix was left, he believed that the doctor had an erroneous conception. When the body of the uterus and the greater part of the cervix was removed with the tubes and ovaries, "menstruation" was impossible, and the "menopause changes" must necessarily be identical whether or not a small portion of the cervix was left.

DR. HERMAN J. BOLDT showed

A GLASS HYPODERMATIC SYRINGE.

He took the liberty of showing the Society this glass syringe, which could be absolutely sterilized, which was very important when the new method of "medullary narcosis" was considered. The syringe was made in France and was air-tight. In his opinion it was the only kind of syringe in existence at the present time which may be called "ideal." The needles are placed in a separate steel receptacle in such a way that the points cannot be injured by coming in contact with any part of the syringe case. The needle slips readily over the ground-glass point at the end of the syringe barrel, and fitted just as tight as a needle which was screwed on. Dr. Marx, who used medullary narcosis extensively, would probably appreciate the advantages gained by a syringe which can surely be sterilized and the fluid in the barrels seen when the instrument was filled for injection. Of course it was necessary to remember that a glass syringe breaks readily when it is not carefully handled.

DR. S. MARX stated that it was unfortunate that he did not appreciate that syringe; his opinion of it resulted from practical experience he had had with it. He had been called upon late one night to do a medullary puncture in an urgent case. The syringe dropped upon the floor and smashed. One could

imagine his predicament if he had been twenty-five miles away from an instrument-maker. He had done lumbar puncture over fifty times, and he was satisfied with the solid syringe which he showed. The instrument he showed he had used in all his experiments, could be unscrewed, could not be broken, and it could be boiled.

DR. GEORGE L. BRODHEAD read the paper of the evening, entitled

THE TREATMENT OF PERSISTENT OCCIPITO-POSTERIOR
POSITIONS OF THE VERTEX.¹

In the discussion DR. E. B. CRAGIN said the subject presented by Dr. Brodhead to the Society was a very important one, and in the main he agreed with him so far as the methods employed by him were concerned; the same methods, as a rule, were employed at the Sloane Maternity with a good deal of success. It seemed to him very important to find out, in the first place, just what position the child occupied. A great many of the men whom he met in consultation did not feel sure just what the position was that they had to deal with. He thought that if the student or practitioner had any doubt as to the position it would be wiser to introduce the hand into the vagina, under anesthesia, and find out the position. Dr. Brodhead referred to performing, or attempting to perform, rotation from the outside; the method that he found of some value at the Sloane Maternity was the combined method—*i.e.*, the surgeon manipulates with his hand in the vagina while his assistant works without, so attempting to rotate the body of the child while the surgeon rotates the head. Dr. Brodhead also referred to the solid-blade forceps. He did not mean to say that the solid-blade forceps was always the best; he had used both, the fenestrated-blade as much as the solid-blade. He was impressed more and more, however, with the value of the solid blade in just such conditions as Dr. Brodhead referred to in his paper. He had no doubt but that the solid-blade could be introduced more easily, could be more easily rotated in the pelvis, and could be removed more readily. In just such cases as are before the Society for consideration, the occipito-posterior positions of the vertex, these forceps were most valuable. There was another point he considered of great value—the method of introducing one of the blades in the median line and posteriorly, using it as a vectis in starting the rotations of the child's head, then introducing the other blade laterally. This was a method often used at the Sloane Maternity, and it was found to be of great value. He agreed with Dr. Brodhead that rotation by the use of forceps was the method we ought to practise. The more experience we get from this method the better do our results seem to be. He believed that we were working in the right direction when we earnestly and carefully tried to use the forceps for rotating in occipito-posterior positions of the vertex.

¹ See original article, p. 806.

DR. J. C. EDGAR, continuing the discussion, was sorry that he did not hear the whole of the paper. He was very glad to hear two points referred to which interested him much. First, that the forceps could be used as rotators. He had used the forceps as rotators for many years, yet he knew that many believe that the forceps should not be used as such. He believed the forceps could be so used to advantage with safety to the fetus and the maternal parts, and that it made little difference whether the forceps had solid or fenestrated blades, although his preference was for the solid blades in treating cases of persistent occipito-posterior positions; they were more easy to introduce, more easy to rotate, and could be taken out with ease. The second point which Dr. Brodhead made was that the forceps could be adapted to the baby's head. Some time ago he remembered that some Philadelphian sent out a number of questions asking if it were possible to make use of the forceps under these conditions with safety. The *résumé* of the answers showed that authorities were about equally divided. Some claimed that they could be applied with safety over the baby's ears; others replied that they could not be applied with safety, although they might be used in certain cases. Regarding the question of diagnosis, he acknowledged that cases are occasionally seen where the diagnosis was pretty foggy. He did not believe that in a primipara, with the head in the upper part of the pelvic cavity, with labor on for some time, with a large caput succedaneum, we could always make a diagnosis of occipito-posterior position without giving a sufficient amount of an anesthetic. He was fond of using the ear as a landmark, and he was accustomed to teach that the sterile hand could be used to go high enough to get this landmark. It is a landmark that very rarely becomes edematous, and it enables us to make sure of our diagnosis. If there is any doubt in regard to one ear, try the other ear. In a large number of cases he found that it takes but little of an anesthetic to enable one to find the ear. Regarding manual correction in occipito-posterior positions he had not had much success with it. The method of combined internal and external manipulation he had tried, but he confessed he had made a failure of it. If the shoulders could be brought around at the same time as the head, that would be another question. If one introduces the hand into the pelvis, and if one could get by the head and reach the shoulders, it would destroy the equilibrium of the fetus and likely cause asphyxiation. It was similar to a case of version; version must be completed within a reasonable time, because the equilibrium of the circulation is disturbed, and so asphyxia is likely to occur and the child may lose its life. The point that Dr. Brodhead brought out—*i.e.*, full dilatation of the tract—was a good one. We often see cases of persistent occipito-posterior positions without full dilatability of the cervix. He thought there was no question but that many cases would with full dilatation terminate spontaneously. The first point in preparation for operation is dilatation of the passages. He did not

know whether Dr. Brodhead mentioned this fact or not, but there was a large number of cases of persistent occipito-posterior positions where, if the head was brought down upon the levator ani muscle and the patient let alone, the case would terminate spontaneously. The forceps should be applied over the ears of the baby and the head brought down to the pelvic floor; then, if there was no immediate indication for delivery, spontaneous delivery might be allowed to occur. This was the method he was inclined to start with—*i.e.*, apply the forceps over the baby's ears and bring the head down upon the levator ani, and then to wait and see what will happen. If the woman has two or three good pains, let her alone and wait.

The question of reversing the forceps is an interesting one. In Paris they tell us we do not know how to use the forceps in New York. In Paris they apply the forceps beautifully. He did not believe there was another nation in the world who could use so well the Tarnier forceps. Where the axis-traction forceps reversed can be applied over the baby's ears and the traction rods alone used, and the head shows a tendency to come around, he thought it was a good plan; although in his experience it will not always come around, and there is danger, too, of lacerating the pelvic floor or doing some other damage. The occiput should be started from its permanency; there was no other way of doing this except by turning the handle of the forceps, thus using the instrument as a rotator. If applied properly they can be used with safety to the fetal head and to the integrity of the pelvic floor. It is important that the forceps should be taken off and reapplied. To his mind the best way was to try to get the head down in the parturient canal in a transverse position, then to take off the forceps and reapply them, and so bring the head around to the anterior position. He believed there were two or three cases reported where a permanent occipito-posterior position had changed into a mento-anterior. He believed there were two or three cases only in literature where, without manual effort, an occipito-posterior position changed into a mento-anterior one. He had tried twice in hospital practice, but had never succeeded in so rotating the head upon a transverse diameter.

DR. SIMON MARX believed that success in the treatment of these cases depended upon diagnosing the condition and upon the preventive treatment—*i.e.*, to influence the rotation of the head. He agreed that the diagnosis of occipito-posterior positions was extremely difficult, and sometimes even impossible, without the introduction of the full hand into the uterus. He believed that a strongly presumptive diagnosis could be made from the symptoms—an early rupture of the membranes, slow engagement of the head, and tardy pains. When he was unable to make a positive diagnosis (in that way) by ordinary examination, he depended upon the ear. When he finds that condition present he always places the patient to get the benefit of postural treatment, right- or left-sided. If instituted early enough, ninety-nine out of one hundred heads will rotate

along to the pelvic floor. He believed that it was immaterial whether the occiput was anterior or posterior when the head is above the brim; then the only treatment was version. He had a horror of the application of forceps above the brim, and he never attempts to apply them there unless the uterus is threatened with rupture or already ruptured. When he had found that the postural treatment did not avail, if the head was well engaged and there was no tendency to posterior rotation, he had during the past five years used axis-traction forceps—one of the most elegant and safest ways of rotating these heads. Why axis traction had not come more into vogue in this city he did not know. He never went to a labor case unless he carried with him axis-traction forceps. If the head will not rotate by mere traction on the traction rods, the blades are taken off: they are then applied in an extremely oblique position, when traction is made with the traction rods, and then the normal mechanism of labor will rotate it around; where this tendency does not occur, then traction should be made by the rods, while the blades of the forceps are slowly turned at the same time, teasing the head around as traction is made downward. He believed that it should come from this Society that every case should be distinctly diagnosed before operated upon. He believed that if the students were better taught (and this statement was directed to the teachers present—Tucker, Edgar, or Cragin), specifically taught, to recognize the various positions and presentations, fewer occipito-posterior positions would be encountered.

DR. MALCOLM MCLEAN said that what he had to say in regard to the case could be summed up in a few words. He depended upon the hand in making a restitution in these cases. He had always made it a rule to make the diagnosis by the method referred to by Dr. Edgar. He believed that a mistake in diagnosis is made more frequently than is generally supposed. The treatment of the cases has very often much to do with the persistence of these positions. His experience told him that nine out of every ten obstetricians apply the forceps without attempting to make diagnosis except by the sutures and the fontanelles. It might be that the majority of men could make a diagnosis in that way, yet he was unable to make a diagnosis by means of the sutures and fontanelles. Therefore he argued that a mistake was frequently made in the diagnosis of anterior positions when there really existed true posterior positions, and if the forceps were locked upon such a head one would be liable to force a persistent occipito-posterior position which would not have occurred.

He had seen gentlemen, who ignored the position of the body of the child in cases of occipito-posterior positions, have difficulty in manipulating the head of the child. They will introduce the hand and take hold and turn it all right, but it will not descend. In these cases he had found that rotation should be on the opposite side of the pelvis; rotate it all the way round. Why? He could not account for it, unless it was

in the fact that the cord in all these cases had passed around the shoulder of the child and around the neck, and so shortened the cord, making it impossible for the child to rotate to the right planes. Turning the child in the opposite way unwinds the cord. He had demonstrated this in a number of cases, and he had tried to insist upon its proper recognition. He had little or no difficulty in rotating these heads by means of the hands. He had been much interested in Dr. Brodhead's paper, especially in regard to the use of the forceps. In this he had had no experience. So far he had depended upon the hand and had succeeded in rotating and dislodging the heads.

DR. E. A. TUCKER said that rotating the occiput to the front with forceps, as now advised, would have been considered malpractice a few years ago. He had not seen a text book which made the direct statement that the head could be rotated with forceps with safety to the mother and to the child. Yet this procedure is being done repeatedly by our best operators. If one is engaged in active obstetrical work, he will be sure to run across a moderate number of cases of *persistent* occipito-posterior positions. There are dozens of cases in which postural treatment or combined manipulation makes the occiput rotate to the front and give no further trouble, but such cases he did not consider "*persistent*." By "*persistent*" he understood those cases in which the occiput came down posteriorly and remained so, unless some kind of operative interference was used. He thought it was an important advance in the art of obstetrics to be able to state that we believe in such a practice as forward rotation of the occiput with forceps. It was not so taught in most of the schools. Even such a skilful operator as Winckel does not mention the subject of rotating the head with forceps; he says if it does not come around after trying all non-operative methods of rotation, we should deliver as occipito-posterior, and this often results in tearing out the whole pelvic floor if the head is large. Most of the later writers cling to the same plan. One modern writer stated that when the occiput was persistently posterior the "judicious use" use of forceps should be undertaken, but leaves it for each operator to guess what "judicious use" means. He saw a case this last summer of occipito-posterior position which persisted in a primipara; she had had strong pains in the second stage for a long time, but the head failed to rotate. The doctor in attendance went home and got out his modern text book, and found that he should use the forceps "judiciously." He wisely had a consultation.

Regarding the cases with head above the brim, he agreed with the reader of the paper. In connection with this he wished to mention an interesting experience. A multipara, who had trouble with her previous two labors, had had performed a ventral fixation. Pregnancy began a few months later. The false ligament in front stretched well and her pregnancy was normal in every way. When labor set in it went along normally to the second stage; then the head, as it

descended, rotated from its original position of L. O. A. above the brim to L. O. P. in the pelvic cavity. After an hour in the second stage the occiput was found to be directed posteriorly, and was held there by a deformed coccyx. He used the forceps as advised by Dr. Brodhead, and the head was readily turned and delivered. This last month—September—he again delivered her. This time the position was R. O. A. above the brim. When the second stage began the head, in descending, rotated from R. O. A. to R. O. P. and finally to O. P. Instead of waiting a long time, the head was turned with the forceps and delivered in fifteen minutes. The child was of good size, weighing about eight pounds. Whether the ventral fixation of the uterus had any effect in aiding or causing the posterior rotation of the occiput he did not know.

Another point he wished to speak of was the injury to the soft parts. The books harp on this injury as one of the dangers in using forceps. In his opinion the injury to the soft parts was more often the result of waiting too long. When the second stage had existed for several hours with the occiput posterior, the vulva and the perineum and all the parts became edematous. If one attempted to rotate the head or to deliver in any way with or without forceps, extensive laceration of the soft parts was sure to occur under such conditions. If you do not wait so long that the parts become edematous, the methods advocated by Dr. Brodhead will not cause injury. Since 1891 Dr. Tucker had done this operation scores of times, so that with him it was now no experiment. If the occiput tends to remain posterior, he rotates it to the front with forceps in the way recommended by the reader of the paper.

The points about accuracy in diagnosis could not be too strongly emphasized. He disagreed with Dr. McLean when he states that the position cannot be made out by means of the sutures and fontanelles. In the great majority of cases the position can be made out by recognizing one or the other of the fontanelles and the sutures connected with it.

Moderate pressure should be made with the forceps after it is applied to the head, or else the blades may unlock and twist around. *Moderate* pressure cannot injure the child; it should be just enough to keep the blades to the sides of the head.

Regarding the question of solid or fenestrated blades, he preferred the solid blades. The fenestrated forceps would not rotate a head so easily as the solid-blade forceps would. Edema of the head or of the maternal soft parts allowed the fenestrated forceps to sink in and cause more or less injury to the mother and child.

He thought that if the writer of the paper wished to go into the subject fully, he should have taken up also the posterior position of the occiput in breech cases. There were now and then cases of breech presentation in which the occiput rotated posteriorly and gave no end of trouble in delivery of the after-coming head.

DR. C. A. VON RAMDOHR had heard with interest the

remarks of Dr. Brodhead. Those of Dr. Edgar had practically taken the wind out of his sails. A correct diagnosis is always profitable and absolutely necessary in occipito-posterior positions. But whether the diagnosis be made by the introduction of the hand or by external means he thought to be indifferent. Once in a great while, as Dr. Edgar has stated, it was impossible to make a diagnosis. If Dr. Brodhead had succeeded in rotating the child in his first case, of course the child must have been very small and the pelvis roomy. After the shoulders had engaged in the pelvis, with the head on the perineum, it was impossible to twist the head through an arc from 90° to 150° without doing great injury to the neck of the child. But such a thing is possible when the shoulders are not fully engaged and when the head is not absolutely pressing on the perineum. He advised the judicious use of forceps when it was possible to rotate. When the head is above the superior strait, with the occiput posterior, it is practically indifferent what we do, because we never know whether Nature will not take matters into her own hands, and one never knows whether the anterior rotation is the result of the manipulation or would have taken place anyway. German obstetricians had long ago recognized this fact, and therefore only recognized first or second position—*i.e.*, occiput right or occiput left. When the shoulders are not in the pelvis he believed it was proper to rotate the head, if it can be done by the judicious application of instruments in the hands of an experienced operator.

DR. BRODHEAD, in closing the discussion of his paper, thought the method adopted by Dr. Cragin was a good one, although he had never tried it. It was very important to know the position, there was no doubt about that. He thought the suggestion of Dr. Edgar—*i.e.*, if one could not make a diagnosis by means of the sutures and fontanelles, by feeling for the ear one could make a positive diagnosis of the position—was a good one. The plan of Dr. Edgar's of bringing the head down to the pelvic floor and leaving the rotation to Nature, if possible, he had not used. In regard to Dr. McLean's remarks in reference to manual rotation in these cases, he knew the text books recommended the procedure, but he had never tried it, always resorting to instruments. The speaker thought there was a number of cases in which, where the head was well down and where it fitted the pelvis tightly, rotation could be more easily accomplished with the forceps, with less of the anesthetic and with less pain. He was glad to hear that Dr. Tucker had followed that method in such a large number of cases, and he was gratified to learn that so many had used the plan successfully. In reference to Dr. Ramdohr's statement that the child must be small or the pelvis large, as a matter of fact, in the cases reported, the children were of normal size and the pelvis as well. In his experience rotation took place, as a rule, when the head was down low.

TRANSACTIONS OF THE WOMAN'S HOSPITAL SOCIETY.

Stated Meeting, October 30, 1900.

The Vice-President, JOHN ASPELL, M.D., in the Chair.

DR. LE ROY BROUX.—I submit for your consideration to-night the following reports of operations on four patients. They have been selected from the summer's work more on account of the unusual pathological conditions found than for any special difficulty in the operations themselves.

ECTOPIC GESTATION WITH PYOSALPINX OF THE OTHER SIDE.

The first specimen I wish to present was removed from Mrs. F., age 25 years, who entered the hospital on June 12, 1900, with the following history:

Three years previous to my seeing her she had a miscarriage three months advanced, at which time she was confined to her bed for four weeks with fever. Since this miscarriage she has had recurrent attacks of pelvic pain, attended at times with fever. Her last menstruation occurred on May 22, ten days over-time, and was so profuse as to confine her to her bed for nine days; during this time she was curetted by her physician. The flow has been almost constant since this occurrence, attended by pain throughout the pelvis. She was admitted to the hospital with the tentative diagnosis of tubal pregnancy, probably complicated by pyosalpinx of the other side. She was watched for ten days before operation. The usual abdominal route was chosen, and both adnexa were removed with the electric clamp. The recovery was uninterrupted.

The pathological report showed that both tubes were thickened, occluded, and adherent; one contained pus and the other blood clot. The microscopical examination of the blood clot showed undoubted chorionic villi.

CARCINOMA OF BOTH OVARIES ATTENDED BY CARCINOMA OF BOTH MAMMÆ.

This second case is a very unusual one. Mrs. C., age 34, came under my care in the Woman's Hospital, August 3, 1900. Her history was as follows:

She was married and had one child 9 years of age. She had had no miscarriages. Her general physical condition

appeared to be excellent. She stated that for some months she had been having pain in the pelvis, and for which she had been under treatment. For two months prior to her entering the hospital both breasts had become very much enlarged, indurated, and painful. Her physician sent her to the hospital on account of her pelvic condition. She stated that the induration of both breasts had become much less and that her pain had subsided greatly. Her local condition, when first seen, was as follows:

Breasts.—Both glands were the seat of indurated masses located under the nipples. There was no attachment of the overlying skin to the masses. There was no retraction of the nipples. There was no attachment of the masses to the underlying tissues. No enlargements of the axillary glands were felt.

Pelvis.—Two apparently solid masses were recognized on both sides of the uterus.

On account of the history of diminished size of the mammary masses, taken in connection with the condition found at the time of examination, I was inclined to watch them further, with the hope that they would prove to be cases of mastitis and would disappear under treatment.

The operation for the pelvic condition was done on August 13. The abdominal route was selected. Both ovaries were found to be the seat of solid tumors without any attachment to the surrounding parts. The Fallopian tubes appeared to be healthy. Both adnexa, with tumors included, were removed close to the horns of the uterus by means of Skene's electric clamp. The possibility of malignancy being borne in mind, a close examination for enlarged pelvic glands was made, but none were found. The recovery was uneventful. The pathologist's report was carcinoma of both organs. Within a month after the operation the breasts had become markedly carcinomatous, and examination under anesthesia showed a marked nodular extension in the pelvis. This report is made on account of the rare coincident occurrence of carcinoma in both ovaries and both mammae, and on account of the rapid extension of the disease in the pelvis.

PAPILLOMATOUS CYSTS OF BOTH OVARIES.

The patient from whom this specimen was taken was Mrs. N. H., age 40 years, who was admitted to the hospital May 3, 1900. She had had five children. For the last eight months she had had much pain in the right side. Menstruation was not disturbed. Upon the right side a moderately large cyst was recognized. After it was removed by abdominal section the left ovary and tube were examined. This ovary appeared to be healthy, excepting in one portion which contained a small cystic Graafian follicle. Projecting from the wall of this minute cyst, and beyond the periphery of the ovary, was the commencement of a papillomatous growth. The tube and ovary were removed.

ADENOCARCINOMA OF THE ENDOMETRIUM ASSOCIATED WITH FIBROMYOMA OF THE UTERUS.

The patient was Mrs. H. L., age 43 years. She is married and has two children, the last 12 years old. I first saw her in my office July 12, 1900, when she gave the following history:

She was regular up to three months ago, since which time she has been flowing almost constantly, with pain over both sides, chiefly the left. The patient was very nervous and little or no examination could be made. A curettage was urged for diagnostic purposes. This was done July 11. At this time, while under the influence of the anesthetic, the presence of a fibromyoma in the body of the uterus was readily recognized, also some inflammatory masses on both sides of the uterus. The uterus was curetted, and the detritus coming away, very scant in quantity, was sent to the pathologist, Dr. Matthews, for examination. On July 23 the pathologist's report was "commencing adenocarcinoma." One week later an abdominal hysterectomy was performed.

DR. JAMES N. WEST.—I should like to ask Dr. Broun what is the condition of the patient who had carcinoma of the ovaries.

DR. LE ROY BROUN.—She rapidly failed. She was kept in the wards of the hospital about two months and a half, and, finding that we could do nothing for her, we let her go home.

DR. JAMES N. WEST.—Did the carcinoma recur?

DR. LE ROY BROUN.—I cannot say that it recurred, because I am not sure that all the diseased tissue was removed. There were no enlarged glands which could be palpated. It may have been that the whole thing was generalized.

DR. GEORGE H. MALLETT.—It was taught some years ago that when suppurative disease occurred on one side it was sure to follow upon the other; therefore it was advised that both appendages be removed, and later it was advocated that the uterus be removed as well. Dr. Broun's case is one that has proved the value of conservatism in surgery and gynecology. I did not understand how long after the symptoms of suppuration occurred that pregnancy took place.

In the next case—the carcinomatous case—several men have operated and removed both breasts with the idea of relieving inoperable carcinoma of the uterus, and, again, certain men have advised removing both ovaries to relieve carcinomatous conditions in the breasts. The case related is certainly unique. There are several cases on record where diseases of the ovaries and uterus have caused enlargement of the breasts.

DR. A. PALMER DUDLEY.—The first case shown, that of pyosalpinx and extrauterine pregnancy, demonstrates that, although pyosalpinx existed on one side, the other tube was patent, and is a strong argument in favor of conservative work.

The second case, that of carcinoma of the uterus and breasts, is a very rare condition. In my twenty-seven years of hospi-

tal service, in teaching, etc., I have never yet seen a double carcinoma of the breasts and double carcinoma of the ovaries coincident. I have seen malignant disease of the breast and malignant disease of the uterus combined. I saw that in the Woman's Hospital in 1882, and I have seen one or two cases since. Now, it is an interesting question as to the true character of that disease, whether it is carcinoma, sarcoma, or scirrhus. In scirrhus would you not expect the lymphatic glands to become infected?

DR. LE ROY BROUN.—The carcinoma of the breast was thought to be scirrhus.

DR. A. PALMER DUDLEY.—Would you expect carcinoma of the breast to show lymphatic enlargements in the axilla as quickly as glandular enlargement occurred in the peritoneum if the ovaries were involved?

DR. LE ROY BROUN.—No.

DR. A. PALMER DUDLEY.—Therefore the doctor has answered my criticism as to why the carcinoma extended so rapidly to the peritoneum in four weeks' time. One of the first laparatomies I ever made was for carcinoma of the uterus and ovary. In five weeks' time the growth reappeared in the pelvis, and the woman died from general carcinomatous degeneration of the peritoneum of the opposite ovary. You would consider the woman generally carcinomatous?

DR. LE ROY BROUN.—Yes.

DR. A. PALMER DUDLEY.—The other case of papilloma of the ovaries is an interesting one, and goes to show how those corpora lutea which were not absorbed may take on degenerative action and become papillomatous. I have seen three or four papillomatous growths, and I have reported papillomatous ovaries from unabsorbed corpora lutea.

This fibroid condition is one that attracts considerable attention. This is a beautiful specimen, but there are no evidences of distinct fibroid tumor there. The uterus is symmetrically enlarged and is pear-shaped, with walls generally thickened all the way down. Is that a fibroid tumor, or is it simply fibrous degeneration of the uterus which is breaking down or beginning to break down in the uterine cavity? Would not that result in adenocarcinoma of the uterus? It is perfectly symmetrical, showing new formation there, but whether fibroid or myofibroid it is for Dr. Broun to tell us by microscopical test. It seems to indicate a commencing adenomatous degeneration.

DR. LE ROY BROUN.—It has not been examined microscopically. Upon cross-section there was found a hard uterus which appeared to be a fibromyoma instead of a myofibroma. It was hard and one could not consider it a simple adenoma.

DR. A. PALMER DUDLEY.—Did it not appear like a tumor in which there was beginning cancer?

DR. LE ROY BROUN.—No. It was a commencing adenocarcinoma of the endometrium complicated by a fibromyoma of the uterus.

CASE OF CYST IN THE ANTERIOR VAGINAL WALL.

DR. JAMES N. WEST.—From several interesting cases seen during my service at the Woman's Hospital last summer, I have selected one because it presented some puzzling features. This case was that of a young woman, twenty-two years of age, who came to the hospital on account of disturbances in menstruation and a purulent discharge from the vagina. She had first menstruated at the age of thirteen, and since then her periods had been irregular, occurring every three to five weeks. She flowed eight days, the first few days the flow being rather excessive. She came into the hospital stating that she had had a purulent discharge from the vagina for two years. Upon examination I detected a peculiar condition, as though there were a cavity of some kind superimposed upon the vagina, and yet I could not find any opening to that cavity. A sound introduced into the bladder showed there was no connection there. The urethra was perfect. I concluded that the pus came from the uterus and that the patient had an endometritis which was responsible for the discharge. Before curetting her I noticed a discharge from the cervix and felt positive that the discharge came from the uterus. As I was about to begin dilatation, I noticed drops of pus from a pinhole opening into the vagina at the junction of the cervical endometrium with that of the anterior vaginal wall. I then made an incision into the lower part of the vagina and opened into a large cyst. The cyst walls appeared to be lined with epithelium like that of the vaginal mucous membrane, and beneath this lining on the upper part was the muscularis of the bladder. The cyst was incised thoroughly, washed out, packed with gauze, and the uterus dilated and curetted. I could find no connection between the cyst and the urethra. She made a prompt recovery. I tried to obliterate the sac by swabbing with carbolic acid, and endeavored to promote adhesions, but could not. Since operation she has gained thirteen pounds in weight. There is no discharge from the vagina. The question now arises as to the origin of this cyst. I have not been able to determine its nature, and think we know comparatively little about such cysts.

TETANUS FOLLOWING HYSTERECTOMY.

DR. JOHN ASPELL.—This patient was a woman 40 years of age, well nourished and single. She told the story of having had an abdominal tumor for two years. The inconveniences, outside of the weight, were slight up to one year ago. She was a teacher and obliged to go a half-mile to her school every morning. With an increase in size of the tumor its weight became a burden, and this was the cause of her seeking relief.

She was submitted to operation on the morning of September 6. An incision was made in the median line of the abdomen and a large, nodular fibroma revealed. The removal

of the growths with the uterus was effected by the angiotribe. A few small catgut ligatures were used to unite the peritoneum over the stump of the cervix.

She left the operating room in good condition and rallied from the anesthetic easily. Her convalescence was smooth up to the morning of the tenth day, when the nurse noticed a slight twitch of the muscles of the face and flexion of the left arm. It was over in a few seconds. The house surgeon was called and immediately notified me by telephone. I reached the hospital at half-past seven, an hour after the spasm, and found a slight rigidity of the jaws. At eight o'clock forty cubic centimetres of tetanus virus were injected, and twenty cubic centimetres at two-hour intervals up to the following afternoon, when she died in a spasm.

The points in the case are these: The operation was done by means of the angiotribe. A few ligatures of small catgut were used to cover the stump. The operation consumed the greater part of an hour. The patient was free from pains after the operation, with a temperature varying from 99° to 100° till the tenth day. The discharges from the bowels from the second day after the operation, daily till her death, were foul, greenish-brown in color, and of the consistence of tar. They were not examined for bacilli. One of the nurses assisting at the operation had a patient recovering from tetanus under her care in the ward, which was two floors below the operating room. The patient lived thirty hours after the onset of the spasm.

The question I ask you is, Did I lose my case through infection from the germ itself or through its spores?

DR. GEORGE H. MALLETT.—We had a similar case at the General Memorial Hospital last winter. A woman 24 years of age had an operation performed for a salpingitis, and both ovaries and tubes were removed. The patient made an uneventful recovery up to the fifth or sixth day, and long enough to make one feel that she was not going to suffer from sepsis. The symptoms occurred in almost the same way: she began to have jaw stiffness, but she did not consider that she was sick. She could not swallow very well. The case progressed and she had regular spasms. A neurologist was called in consultation and a diagnosis was made of tetanus. The case went from bad to worse and finally died. There had been no similar case within one and a half years, and none on the same floor and ward.

Official Transactions.

CLARENCE REGINALD HYDE,
Secretary.

TRANSACTIONS OF THE SOUTHERN SURGICAL AND GYNECOLOGICAL ASSOCIATION.

PROCEEDINGS OF THE THIRTEENTH ANNUAL MEETING, HELD IN ATLANTA,
GEORGIA, NOVEMBER 13, 14, AND 15, 1900.

The Association convened in the ball-room of the Kimball Hotel under the presidency of DR. A. M. CARTLEDGE, of Louisville, Kentucky.

An address of welcome was delivered by Governor CANDLER, of Georgia, which was responded to by the President.

Dr. HOWARD A. KELLY, of Baltimore, read a paper on

THE REMOVAL OF PELVIC INFLAMMATORY MASSES BY THE
ABDOMEN AFTER BISECTION OF THE UTERUS.¹

DR. WILLIS G. MACDONALD said his experience in bisection of the uterus as an operative procedure had been very largely associated with tumors of the uterus deeply situated in the pelvis, attended with great tension upon both broad ligaments. In dealing with fibroids of the uterus it has been his custom to follow the method improved by Dr. Kelly, and the only objection to the operation lay in a certain class of cases in which the tumor is deeply situated in the lower segment of the uterus, or extends to one side or the other in the broad ligament, or is associated with microcystic and adherent ovaries, so that when the operator lifts the tumor out of the abdomen to begin preliminary ligation on one side or the other he causes considerable tension upon the broad ligament, and when the ligature is placed upon one or the other ovarian artery there is more or less danger of its giving way when the tension is released. He had seen many cases, in his own practice and that of other surgeons, in which this accident had occurred.

DR. J. WESLEY BOVÉE, of Washington, D. C., said he had occasionally removed the body of the uterus previous to the removal of the appendages in pus cases, also in fibroid tumors of the uterus, but in some instances he had followed the method of Kelly since he read his paper before the Washington meeting of the Association on the removal of fibroids of the uterus by going down on one side, as he had described it, and going up on the other. He had recently modified this plan in dealing with pus cases—namely, to cut off the tube and ovarian ligaments from the uterus on one side, clamp the

¹ See original article, p. 818.

round ligament, going down to the cervix, clamping the uterine artery, cutting through the cervix and uterine artery on the other side, going up and removing the appendage on the other side with the uterus.

DR. W. E. B. DAVIS, of Birmingham, Ala., expressed the opinion that the method outlined by Kelly would be of great assistance in the severe cases of inflammatory pelvic disease. The removal of the uterus for inflammatory disease had its origin in the difficulties which beset French surgeons in removing the appendages by the vaginal method, so that it became necessary for them to remove the uterus in order to have a route by which they could reach the adnexa. Dr. Kelly, therefore, had accomplished by operating from above what French surgeons had so frequently done through the vagina.

DR. BEVERLY MACMONAGLE said he had seen Dr. Kelly operate on two cases by the method he had described, with very satisfactory results.

DR. GEORGE J. ENGELMANN, of Boston, considered the method a step in advance, and said it was really amazing that no one had thought of doing this work by the abdomen before it had been done by the vaginal route.

DR. M. C. MCGANNON, of Nashville, Tenn., read a paper on

VESICO-VAGINAL FISTULA.

He referred to the work of Sims, Emmet, Mackenrodt, and others in this field of surgery. He has applied the principle of Mackenrodt in six cases during the last two years, with primary union and complete closure of the fistula in every case. The technique in each case was the same, which may be briefly outlined by detailing one of the author's cases, which, because of the extent of the injury, is worthy of record.

The patient, a woman 33 years of age, was referred to him by a physician who lives in Tennessee. She was a farmer's wife in poor circumstances. She had always been able to do not only her housework, but at times to help in the fields. She was the mother of three living children. Three months before patient came under his care she had given birth to a monster presenting anterior duplicity. After a labor of six hours one head passed through the vulvar outlet, but for twelve hours more all efforts at delivery of the rest of the child were futile. After consultation, as the child was dead, it was decided to make an effort at extraction by pulling upon the presenting part. The result was the delivery of a well-formed child with two distinct, symmetrical, separated heads, fused at the shoulders. There were two necks, and between them an elevation like the ending of a shoulder. The outer shoulders were natural, and from the point of one to that of the other across the back measured nine inches. Immediately after delivery it was observed that the recto-

vaginal septum had been torn through; four days later there was no control of the bladder.

Upon examination he found the external parts much excoriated from being constantly bathed in urine. The vulvar orifice was gaping. The recto-vaginal septum divided half-way to the cervico-vaginal junction, and the anterior vaginal wall and the base of the bladder were gone from three-quarters of an inch behind the meatus urinarius to the cervix, the anterior lip of which was partly destroyed. From side to side the opening extended from one lateral vaginal wall to the other. The left ureter opened upon the junction of the vagina with the bladder, but the right emptied itself high up in the vaginal vault.

On March 31, 1899, under chloroform anesthesia, the author passed a urethral catheter through the urethra and into the ureter on the left side, as a guide, that he might avoid injuring that tube during the operation. He then dissected the bladder free from the uterus behind, and separated the peritoneum from a portion of its fundus until he could bring the separated part forward to the portion of the bladder at its junction with the urethra. He then separated the bladder from its lateral connection for about an inch on either side, so that when the posterior part was brought forward and united with the anterior in a crescentic line there was no tension at any point. Fine catgut was used throughout to unite the bladder walls. In introducing the sutures near the ureter, care was taken to roll its opening into the bladder, but at the same time not to constrict its calibre. The catheter passed through the urethra and into the ureter was left *in situ* for twenty-four hours and then removed. After closing the bladder the widely separated edges of the anterior vaginal wall were brought together as nearly as possible, but a large space was left to close by cicatrization. Silkworm gut was used for these sutures in the vaginal wall. At the end of a week the silkworm-gut sutures were removed and the bladder was found to be closed. An opening was now made in the line of the closure on the right side near the lateral vaginal wall, from which the author intended later to remove a strip of mucous membrane with which to lengthen the ureter on that side. Before making this extension to the ureter he desired the cicatrix in the anterior vaginal wall to become firm. Thirty days after the first operation the patient was again anesthetized and a strip of mucous membrane freed from the lateral vaginal wall, beginning in front of the small opening left in the bladder, and continuing to a point behind where the ureter opened in the vaginal vault. A denudation one-quarter inch wide was now made on the anterior vaginal wall around the opening into the bladder, and back to and around the opening of the ureter. The flap raised from the lateral vaginal wall was folded over and united with silkworm-gut sutures to the denudation just described on the anterior vaginal wall, to the opening in the bladder. A ureteral catheter was passed through the urethra along the new channel

and into the ureter. This was allowed to remain forty-eight hours and then removed. Union took place at once. The sutures were removed at the end of six days. The urine flowed along the new channel and into the bladder without leakage from the time of the operation, and now, a little more than a year having elapsed, the urine still continues to flow through this artificial ureter without trouble. It only remained to repair the rectal wall, anal opening, and pelvic floor, which was shortly afterward done, and the patient returned home cured.

In each of the other five cases to which the author alluded the bladder was separated from the vagina and closed with fine catgut. Care was taken to secure perfect approximation of the edges of the opening without tension. Afterward the vaginal walls were brought together as far as possible.

In closing he emphasized the fact that the chief essential to success in operations for vesico-vaginal fistula, whether of large or small size, is closure of the bladder opening without tension upon the suture line. The vaginal wall may be disregarded.

DR. GEORGE BEN JOHNSTON, of Richmond, Va., reported an interesting case of

OSTEOFIBROMA OF THE UTERUS.

The patient, Mrs. S., age 30, was the mother of three children, the youngest being 3 years old. About two years after the birth of the youngest child she noticed an enlargement of the abdomen, and at times experienced difficulty in voiding her urine. She believed herself pregnant, but on account of the continuance of her menses, and increasing difficulty of micturition, she consulted her physician, and an examination of the genital organs was made. This examination disclosed a tumor which filled the pelvic cavity, growing from the posterior wall of the uterus, and so displacing the uterus forward that it pressed upon the bladder. Six months later she missed her menstrual period, and by this time her size had greatly increased and her ability to void urine normally was almost lost. About the middle of March, 1900, after being all day upon her feet, a severe hemorrhage occurred, and the next day she passed a fetus of six or eight weeks' development. Hemorrhage was promptly checked, but her size did not reduce and the pressure symptoms continued. He operated upon her April 10, 1900. Bimanual examination, made before the operation, revealed two tumors, one a large fibromyoma situated posteriorly and to the right of the uterus, the other a small tumor anterior and to the left. Complete hysterectomy was performed. The smaller tumor was found to be intramural and situated at the junction of the body and the neck. On liberation the microscopic examination showed a tumor about the size of a small orange and of firm consistence. Held between the thumb and fingers it gave the sensation that is pro-

duced by pressing a hard-boiled egg the shell of which has been broken. Plates, apparently of bone, surrounded the surface, and on opening it a substance resembling medullary or brain tissue was found. This was unfortunately lost, so that no subsequent histological study of it could be made. Attached to the lower part of the osseous tumor was a small fleshy mass which contained a body about an inch in length, resembling a heart in shape. On opening the uterus a recent placental site was found near the uterine opening of the right Fallopian tube.

Microscopic examination of the tumor developed the following characteristics: It was covered by a fibrous capsule, scattered through which were plates, rounded nodules, and irregular, jagged masses, which, when decalcified, proved to be dense laminae of bone with their included bone cells. These bone cells were not so numerous as in normal bone, while the lamellae were irregular in their arrangement, although showing a general tendency to lie parallel to frequent openings in the bony tissue. These openings were larger and more irregular in shape than the Haversian canals of normal compact bone, and were filled with a connective-tissue stroma supporting blood vessels. The softer parts of the tumor were found to be composed of involuntary muscle fibres, arranged in groups and bundles, which were supported by loose connective tissue. Dense masses of fibrous tissue occurred throughout the tumor independently of the muscular tissue. Microscopical examination of the tumor verified the diagnosis made macroscopically—namely, that the tumor was an osteofibroma. Patient recovered.

DR. HOWARD A. KELLY, of Baltimore, said he would be loath to accept diagnoses that were made twenty-five years ago relative to tumors of this kind, when the nature between calcified tumors and teratomata was not clearly understood, and even pathology itself at that time was wrapped in more or less obscurity. In 561 myomectomies he had met with 27 calcified myomata.

DR. J. WESLEY BOVÉE, of Washington, D. C., mentioned three cases that had come under his observation. In one the tumor was removed through the vagina, it being a submucous fibroid. The tumor pressed down through the cervix, so that it required only slight slitting of the cervix to remove it. Around the base of it he found considerable bony structure in the body of the uterus near the fundus. Two other interesting cases were detailed.

(To be continued.)

REVIEWS.

CANCER OF THE UTERUS. Its Pathology, Symptomatology, Diagnosis, and Treatment. By THOMAS STEPHEN CULLEN, M.B. (Toronto), Associate Professor of Gynecology in the Johns Hopkins University. Pp. 693. With eleven lithographic plates and over three hundred colored and black illustrations in the text by Max Brödel and Herman Becker. New York: D. Appleton & Co., 1900.

This is a companion volume to the remarkable work of Howard Kelly on *Operative Gynecology*, and is characterized by the same beauty in type and make-up and by the same profuseness and perfection in the illustrations, which in themselves present most accurately and completely the whole pathology, gross and minute, of cancer and of all other pathologic conditions which are liable to be confounded with it. Dr. Cullen, and incidentally the readers of his book, may be congratulated in that he has been able to command artists of such rare skill as Messrs. Brödel and Becker.

The inspiration of the text comes from the abundant and carefully-studied material of the pathological laboratory of the Johns Hopkins.

The author, in his preface, calls attention to the appalling number of cases of cancer of the genital tract that come to the surgeon too late for operation, and urges the necessity of the study of ways and means by which the malady may be more generally recognized at the earliest possible moment—at a time when complete removal of the malignant tissue is still possible. Then, to make plain these ways and means to the physician in general, he goes on to demonstrate the anatomy of the uterus, giving special attention to its blood and lymphatic supply and to the macro- and microscopic appearances of its muscle and mucosa. After this he describes in detail the histology, the clinical aspects, the diagnosis and treatment of the various forms of uterine cancer. A very large proportion of the book is taken up by clinical reports of cases and autopsies, and perhaps the main criticism from the point of view of the general practitioner is that there is so great a feast of material spread before him that he has difficulty in assimilating it. This objection, however, is to a certain extent overcome by the excellence of the index, so that if one knows what he wishes to find he can easily turn to it.

The work as a whole is a most important contribution to medical literature. It is distinctly original, bears the impress of extended experience, is scientific, and in language easy and straightforward.

PROGRESSIVE MEDICINE. A Quarterly Digest of Advances, Discoveries, and Improvements in the Medical and Surgical Sciences. Edited by HOBART AMORY HARE, M.D., Professor of Therapeutics and Materia Medica in the Jefferson Medical College of Philadelphia, etc., assisted by CHARLES ADAMS HOLDER, M.D., Assistant Demonstrator of Therapeutics in the Jefferson Medical College. Vol. II., June, 1900: Surgery of the Abdomen, including Hernia; Gynecology; Diseases of the Blood; Diathetic and Metabolic Diseases; Diseases of the Glandular and Lymphatic System; Ophthalmology. Pp. 411. Vol. III., September, 1900: Diseases of the Thorax and its Viscera, including the Heart, Lungs, and Blood Vessels; Diseases of the Skin; Diseases of the Nervous System; Obstetrics. Pp. 408. Philadelphia and New York: Lea Brothers & Co., 1900.

Volume II. is one which must appeal strongly to the gynecologist, containing as it does well-illustrated and carefully-written synopses of the year's advances in abdominal surgery by William B. Coley, Clinical Lecturer on Surgery in the College of Physicians and Surgeons, New York, and in gynecology by John G. Clark, Professor of Gynecology in the University of Pennsylvania. Dr. Coley is fortunate in his assignment to a subject of such live interest as surgery of the abdomen—a field in which so many problems are still unsolved. Surgery of the Stomach is a section which contains abstracts of a number of readable papers. The question of when to operate in appendicitis is discussed and still remains open for discussion. Hernia is a subject upon which Dr. Coley can speak with unquestioned authority. Operations upon the colon receive considerable attention. Surgery of the liver, and diagnosis of abdominal tumors, are among the other subjects treated. In Gynecology, John G. Clark devotes some space to the ultimate results of castration and of operations for retroversio-flexio uteri. Pelvic peritonitis and laceration of the perineum are reviewed from the standpoint of treatment. Uterine hemorrhage in cases of myoma uteri is quite fully considered, the writer having recently devoted himself to a study of the subject, and an extensive abstract of an article upon the occurrence of streptococcus pyogenes in gynecological diseases follows. Movable kidney is another subject upon which a number of papers have been written, while kraurosis vulvæ and several other topics are more briefly treated. Alfred Stengel, Professor of Clinical Medicine in the University of Pennsylvania, furnishes the chapter upon diseases of the blood, of the glandular and lymphatic systems, and diathetic and metabolic diseases. The material is well selected. The subject Ophthalmology is from the pen of Edward Jackson, Emeritus Professor of Ophthalmology in the Philadelphia Polyclinic.

Volume III. contains the extensive subject, Diseases of the Thorax and its Viscera, in charge of William Ewart, Physician to and Joint Lecturer on Medicine at St. George's Hospital,

London. This section contains a large number of brief abstracts. Henry W. Stelwagon, Clinical Professor of Diseases of the Skin in the Jefferson Medical College, discusses recent ideas in connection with his specialty. In the chapter on Diseases of the Nervous System, William G. Spiller, Professor of Diseases of the Nervous System in the Philadelphia Polyclinic, devotes his attention chiefly to clinical neurology, omitting papers of purely anatomical or pathological interest with the intention of making the work of greater actual service to the practitioner. The volume closes with a chapter on Obstetrics by Richard C. Norris, Instructor in Obstetrics in the University of Pennsylvania. This includes abstracts of many of the more important foreign and domestic papers written during the past year upon pregnancy and labor, the puerperium, diseases of each of these periods, neonatal pathology, dystocia, obstetrical operations, ectopic gestation, and coccygodynia.

H. D.

MANUAL OF THE DISEASES OF THE EYE FOR STUDENTS AND GENERAL PRACTITIONERS. By CHARLES H. MAY, M.D., Chief of Clinic and Instructor in Ophthalmology, Eye Department, College of Physicians and Surgeons, Medical Department Columbia University, New York. Pp. 406. With 243 original illustrations, including 12 colored figures. New York: William Wood & Company, 1900.

With an insight into the needs of students and general practitioners born of an extended experience as an instructor in his chosen field, and opportunities for observation furnished by protracted connection with a great clinic, Dr. May has succeeded in producing an excellent manual of diseases of the eye. His intention of satisfying the wants of the student and the general practitioner has been fulfilled by the policy of devoting but little space to the rarer conditions, and describing as fully as space permits the subjects which are likely to demand the attention of any physician. The work is concise without undue brevity, and admirably systematic. While the author does not pretend to supplant the larger standard text books, he comes far nearer to filling the requirements of the man in general practice than many of the smaller compendiums. He places within reach of those whose special branches demand only a diagnosis of the ocular affections and a knowledge of the proper treatment of the more common, the information which they require. The original illustrations fully serve their purpose, and the colored plates of the ophthalmoscopic conditions most often met with, also the work of the writer, are faithful representations. The typographical work is perfectly satisfactory; the paragraphing judicious; the captions distinct. The size of the book permits its use as a pocket manual. The work opens with a chapter upon external examination of the eye by means of inspection and palpation. This is followed by others upon subjective or functional examination and upon objective examination in the dark room,

including the use of the ophthalmoscope. Diseases of the various portions of the eye are taken up systematically, and these are followed by consideration of amblyopia and functional diseases of the retina. After discussing general optical principles and studying the eye from an optical standpoint, errors of refraction, anomalies of accommodation, and disturbances of motility are reviewed in successive chapters. The work closes with one upon ocular therapeutics and general rules for operations upon the eye.

H. D.

TWENTIETH CENTURY PRACTICE. An International Encyclopedia of Modern Medical Science. By Leading Authorities of Europe and America. Edited by THOMAS L. STEDMAN, M.D., New York City. In twenty volumes. Vol. XX., 906 pp. New York: William Wood & Company, 1900.

With this twentieth volume this great work reaches its appointed end, and its publishers, its editor, and its contributors must all be congratulated for the excellence of the results. As far as possible the original plan has been followed, but occasionally events have forced a rearrangement of the articles in the several volumes. Time, sickness, and death have each intervened with their several prohibitions. Semmola, Leloir, Dujardin-Beaumetz, Oertel, Ernest Hart, Kerr, Grainger Stewart, O'Dwyer, and Whittaker have here given the world their last words, the final results of their lifework. Others who had promised their co-operation have died before their tasks were completed, and for this and other reasons it has, in several instances, been found necessary to invoke the aid of new writers. Any inconvenience arising from this deviation from natural sequence has been obviated by means of a very full analytical index, in which the needs of the consulter have been kept constantly in view, and in which special note has been made of the symptomatic indications of disease and of the points in differential diagnosis, thus greatly widening the usefulness of the series as a work of reference.

DISEASES OF THE GALL BLADDER AND BILE DUCTS, INCLUDING GALLSTONES. By A. W. MAYO ROBSON, F.R.C.S., Senior Surgeon to the General Infirmary at Leeds; Emeritus Professor of Surgery in the Yorkshire College of the Victoria University; Member of Council and Hunterian Professor of Surgery and Pathology at the Royal College of Surgeons of England; assisted by FARQUHAR MACRAE, M.B., C.M. (Glas.). Second edition. Pp 313. With 52 illustrations. New York: William Wood & Company, 1900.

This is the second edition of the work of this well-known English surgeon. The first was a reproduction of the Hunterian lectures delivered by the author at the Royal College of Surgeons in 1897. This edition shows certain alterations, notably a change from the lecture to the narrative form. New

chapters on cholecystitis and on gallstones have been added, also an index. The author's statistics have been enriched, since the publication of the first edition, by 135 cases. His mortality for gallstones uncomplicated with deep jaundice, infective cholangitis, or cancer is 1.1 per cent. He advocates the removal of gallstones as soon as they give serious trouble. The writer considers successively, after a preliminary anatomical sketch, inflammatory affections, intestinal obstruction, tumors of the gall bladder and bile ducts, and gallstones. A large portion of the book is occupied by statistical tables of the author's cases, numbering 305.

H. D.

HEART DISEASE IN CHILDHOOD AND YOUTH. By CHARLES W. CHAPMAN, M.D. (Durh.), M.R.C.P. (Lond.), Physician to the National Hospital for Diseases of the Heart, Soho Square, W., etc. Pp. 100. London: The Medical Publishing Company, Limited, 1900.

This little work, the outcome of its author's extended experience, gives much more definite statements and more favorable conclusions than any text book known to us. It is divided into two parts. The twenty-one pages included in the first part give a brief outline of the more usual varieties of heart disease as they occur in young persons, with admirable directions for the hygienic management of these patients, including the questions of education, sports, diet, clothing, and locality. Drugs, while considered of considerable value, are very properly given a distinctly secondary place. Part second is made up of clearly recorded histories of patients, care being taken to bring out the salient points in diagnosis, prognosis, and treatment, so as to set clearly before the mind of the reader the practical and clinical bearings of the cases.

A MANUAL OF OBSTETRICS. By A. F. A. KING, A.M., M.D., Professor of Obstetrics and Diseases of Women and Children in the Medical Department of the Columbian University, Washington, D. C., etc. Pp. 612. Eighth edition, revised and enlarged. 264 illustrations. Philadelphia and New York: Lea Brothers & Company, 1900.

The many editions of this manual called forth by its great success have necessitated such frequent and thorough revision that few changes have been considered necessary in the present volume. Forty two additional illustrations have been inserted, some statements modified in accordance with the trend of recent obstetric practice, and a few errors corrected. Its teaching as a whole is safe, the author's ideas are clearly expressed, and there are no unnecessary details. Certain points may be criticised, as the use of the vaginal douche after normal labor, the bringing down of both feet in version, the use of iron as a styptic in postpartum bleeding, and the statement that it is impossible to reach the promontory in the normal pelvis.

A MANUAL OF OBSTETRIC TECHNIQUE AS APPLIED TO PRIVATE PRACTICE. With a chapter on Abortion, Premature Labor, and Curettage. By JOSEPH BROWN COOKE, M.D., New York, late Attending Physician, St. Mary's Free Hospital for Children; late Attending Physician for Diseases of Children, Northwestern Dispensary, etc. Pp. 169. Philadelphia and London: J. B. Lippincott Company, 1900.

This small book is an eminently practical and safe guide to the young practitioner in the general management of labor. It gives in detail the instruction in little things that he so often wishes for, and, while its teaching is up to date, it does not run into extravagances in either methods or means.

TRANSACTIONS OF THE AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS. Vol. XII. For the year 1899. Pp. 371. Philadelphia: William J. Dornan, 1900.

This volume, in its usual handsome dress of red-brown and green, contains the material presented before the twelfth annual meeting of this well-known society at Indianapolis in September, 1899. Most of the papers and the discussions in abstract appeared in this JOURNAL for September, October, and November of last year.

TRANSACTIONS OF THE SOUTHERN SURGICAL AND GYNECOLOGICAL ASSOCIATION. Vol. XII. Pp. 398. Published by the Association, 1900.

We have here the thirty-six original papers on various surgical and gynecological subjects presented before this Association at its 1899 meeting at New Orleans.

BRIEF OF CURRENT LITERATURE.

OBSTETRICS.

Rupture of the Uterus.—Siedentopf³ writes that with the beginning of labor the uterus divides itself into two segments—an upper active one, the wall of which contracts and expels its contents, while the lower portion of the uterus remains entirely passive. It dilates under the expulsive efforts of the upper zone, and forms a temporary receptacle of the above contents. After this distension attains a certain degree the external os begins to open, and henceforth the inferior portion of the uterus only forms a passage from the fundus into the vagina. Whenever the fetus is prevented from entering the vagina, the lower uterine segment becomes overdistended, until finally a rupture ensues. From extensive anatomical studies and clinical observations the author concludes that the so-called contraction ring forms the boundary between the active and passive segments. An incarceration of the anterior lip of the cervix is not considered essential to rupture of the

uterus. In a second group of cases the pathological stretching or overdistension of the cervix is not observed, or it is not sufficient to explain the rupture. Under such conditions the uterine wall has probably undergone pathological changes and is thus predisposed to rupture.

A third cause for rupture of the uterus is found in the attempts at forcible delivery before the soft parts are properly prepared and dilated. These tears usually commence in the lips of the cervix and extend into the vagina and peritoneum. Among the symptoms foreshadowing rupture of the uterus are mentioned: subjective sensations of fear, also pain, a result of the extreme tension of the uterine ligaments; further, the height of the contraction ring, the character of the pain, and the tension of the round ligaments.

Simultaneously with the rupture of the uterus the pains cease, for the active portion of the uterus has relieved itself of its contents. The presenting parts again become movable, and the fetus and portions of it pass through the rent into the abdominal cavity, where they can plainly be recognized by palpation.

Existing hemorrhage produces its consequent symptoms, varying in degree according to the amount lost. The prognosis depends upon the extent of the tear, whether complete or incomplete, and the size of the blood vessels severed. Aside from the loss of blood, the greatest danger is ensuing sepsis.

In case of rupture remove fetus by laparotomy, if entirely or almost within the abdominal cavity; by vagina if only the head has escaped from the uterus. Incomplete rupture demands expectant treatment, complete rupture active interference, providing the bleeding necessitates it. Laparotomy is the surest and most successful method of treatment. The author reports five personally observed cases.

Brindeau² records a case of rupture of the uterus during the woman's fifteenth labor. Of the fifteen pregnancies, six had terminated as shoulder presentations, four as breech, one as face, and there had been one abortion. In the last labor the feet presented and were drawn down. This resulted in a rupture of the uterus, the fetal head passing out through that organ and separating, but not tearing, the peritoneum. On account of continued hemorrhage and friability of the uterus a Porro operation was performed.

Induction of Premature Labor.—Gunden⁴ speaks favorably of the induction of premature labor in cases of pelvic contraction, and differs decidedly with Pinard, who, at the last gynecological congress, condemned this operation and instead advocated symphyseotomy or Cesarean section. It is admitted that the child's chances are less in premature labor, but the prognosis for the mother is far better. The author reports an interesting case of a woman 45 years old, with a flat rachitic pelvis, in whom he induced premature labor nine consecutive times, with the result of five healthy living children.

Laceration of Soft Parts of Utero-vaginal Canal.—Commandeur¹ reports five cases of lateral and postero-lateral lacerations of the inferior segment of the uterus, the cervix and vagina. Upon these he bases the following conclusions: Primiparity, age of primiparæ, obstetrical operations, size of the child, are their great etiological factors. Whenever hemorrhage follows an artificial delivery immediate palpation of the birth canal from the vulva to the contraction ring is indicated. If an incomplete tear of the lower uterine segment exists and the hemorrhage is severe, the placenta should be extracted manually and the uterus tightly packed. If the vaginal portion of the cervix is torn its limbs should be seized by clamps and traction made upon these. To arrest hemorrhage, immediate suture or tamponing of cervix and vagina is advised. Suture is contraindicated if the lower uterine segment is also torn. Vaginal tears rarely cause a hemorrhage so severe as to demand treatment before completion of the third stage. Vaginal tears, if in the lower portion, demand suture of the perineum and of the vagina if necessary; if in the upper portion, suture; failing in this, tamponade.

Difficult Craniotomy.—Bröse⁵ reports a case of difficult craniotomy performed on a primipara 28 years old. The pelvis was flat, rachitic, with a conjugata vera of 9.3 centimetres. The perforated child was very large, and, owing to the smallness of the soft parts, it was impossible to get past the head and diminish the size of the body. Even after decapitation and traction upon an arm, the shoulders could not enter the pelvis, and delivery was only effected after enucleation of the arm and podalic version. (The reviewer reported a similar case about a year ago. The child, minus brain and blood, weighed 14 pounds, while in Bröse's case the weight was only 9 pounds.)

Inversion of the Uterus.—Ed. K. Bacon⁶ describes a case of inversion occurring after the birth of twins. In this case there was uterine inertia, due to loss of blood; there were also short cords. On the seventh day after labor the patient had a very severe hemorrhage and the uterus became inverted. Five days later, after repeated douching with hot saline solution and manipulation, the uterus returned to the abdominal cavity. The patient has not become pregnant during the year since her inversion.

Hyperemesis Gravidarum.—According to Dirmose,⁷ most cases of hyperemesis gravidarum are due to intestinal auto-intoxication, and the rational therapy is therefore intestinal disinfection. This probably explains the good results often obtained from the administration of creosote or small doses of calomel. It is advised to discontinue nourishment by mouth and feed the patient entirely through nutritive enemata. Irrigation of the stomach and intestines with plain water or weak solutions of boracic acid or permanganate of potash is also indicated. With improvement in the patient's condition natural feeding may again be resumed.

Double Ectopic Gestation.—The report of such a case is furnished by Boissard and Couderc.³ The woman had previously aborted three times. Upon admission to the hospital she was supposed to have had another abortion with retention of the placenta. Two days later there were symptoms of a ruptured ectopic pregnancy, and fifteen days after this violent pain and abdominal distension led to the belief that the old sac had again ruptured. At the operation the left tube showed a recent rupture, and the right a dilated and ruptured tube containing old clots. Microscopic examination of the left tube showed that this also had been the seat of an extrauterine pregnancy.

Treatment of Ectopic Gestation.—Dolérís⁴ considers the vaginal route suitable only for cases of tubal pregnancy which are early and of small size, and for old encysted hematoceles. The abdominal route is desirable when the situation of the tumor is abdominal, when there is severe hemorrhage, and when the tumor is of considerable size. For tubal abortion with hematosalpinx the two routes are equally favorable. Operation is demanded as soon as the diagnosis is made, as a return of the menstrual period is often attended by increased congestion and hemorrhage.

Repeated Ectopic Gestation.—Malcolm Storer and M. T. Thurber¹⁰ report a case of repeated ectopic gestation occurring in a patient 23 years old. The second gestation occurred five months after the first and on the opposite side.

Symphiseotomy without Subsequent Immobilization.—G. Fieux¹¹ presents a second case of symphiseotomy without subsequent immobilization of the pelvis. The fibrous tissue anterior to the symphysis was united by three heavy catgut sutures, and after closure and dressing of the wound a simple abdominal binder was applied. Perfect union was obtained. In view of such results Fieux goes so far as to suggest the feasibility of keeping the pubic bones separated from two to four centimetres. He hopes in this way to obtain union with a permanent enlargement of the pelvis as an aid in later labors.

Syphilis and Pregnancy.—Andérodias¹¹ reports a case of syphilis acquired through a chancre of the ear at the end of the second month of pregnancy. In spite of mercurial treatment a dead and macerated fetus was expelled at about the seventh month.

Modified Champetier de Ribes Balloon.—James D. Voorhees,¹² when dilating the cervix, used a modification of the Champetier de Ribes bag. He describes this balloon as follows: The balloon is conical in shape, is impervious and inexpandible. It is made of thin canvas, firmly sewed, and covered by a rather thick rubber, carefully cemented. It can be boiled and then kept for a short time in some antiseptic solution. There are four sizes, which dilate the cervix respectively two, three, four, four and one-half fingers. The balloon

is dilated with some antiseptic fluid. He gives the advantages of the modified Champetier de Ribes as follows: 1. They are easier to introduce, less bulky. 2. The shape is more like that of Nature's bag. 3. They are inexpandible and cannot burst. 4. They cannot get out through the cervix without dilating it. 5. They are more reliable in starting labor pains. 6. They keep in the liquor amnii. 7. They do not rot. 8. They surely stop hemorrhage in placenta previa. 9. One can pull on the tube. 10. They are less apt to displace the presenting part.

Passage of Alcohol from Mother to Fetus.—As the result of experiments upon animals and women, M. Nicloux¹³ concludes that alcohol consumed by the mother passes to the fetus, the proportion of alcohol found in the blood of each being nearly the same. All the results of chronic alcoholism may thus be transmitted to the child, and the effects upon a nervous system in process of formation may be extremely serious. The alcohol ingested by the mother passes in the milk to the fetus. The amount of alcohol in the milk is about equal to that in the maternal blood. The effects upon the child Nicloux proposes to call congenital alcoholism.

Twin Pregnancy with Hydramnion.—E. Goinard¹⁴ describes a case of twin pregnancy with hydramnion of one ovum. Labor occurred at the end of the eighth month, both children living, but one died soon after.

Corpus Luteum in Relation to Labor.—Lacour¹⁵ upholds the idea that the corpus luteum secretes a product which paralyzes the vaso-dilators of the utero-ovarian system, the nerves and muscular fibres of the uterus. When this product diminishes, the nerves and muscle fibres regain their functional power, causing congestion and contractions even when the uterus is empty, as in ectopic gestation.

Traumatism during Pregnancy.—H. Varnier¹⁶ adds to the literature of this subject the account of a woman, six months pregnant, who jumped from a third-story window, sustaining a fracture of the base of the skull. Pregnancy was uninterrupted and terminated normally.

Appendicitis and Pregnancy.—A. Pinard¹⁷ introduces his remarks by mentioning two cases of mistaken diagnosis by others with fatal results. In one the onset of symptoms in the pregnant woman was attributed to indigestion, and when more severe and when labor had begun they were supposed to be due to slow labor, and eventually to general peritonitis from rupture of the uterus. In the second case the diagnosis of indigestion had been made and the pain quieted by opiates. Operation was too late in the first case, and the second woman was dying when the writer first saw her. In contrast with these cases Pinard records several correctly diagnosed and successfully operated upon. He holds that an early diagnosis is possible, as the signs of pregnancy do not mask those of appendicitis. He has never observed the absence of pain and

muscular rigidity. All pain in the abdomen should attract attention during pregnancy, especially if it is constantly localized in the right iliac fossa. If an abortion or premature labor can be excluded appendicitis should always be suspected. Vomiting of pregnancy is not accompanied or followed by a rise of temperature, hence vomiting with fever should suggest appendicitis rather than indigestion. Pinard adds that all cases of peritonitis and intestinal obstruction complicating pregnancy which he has seen treated medically have died. The diagnosis of appendicitis during pregnancy having been made, operation at the earliest possible moment alone offers chances of recovery.

Superinvolution of the Uterus.—R. Blondel¹⁸ relates the following history: A primipara had given birth a year before to a child which died during labor. The puerperium was normal, except that the breasts, although they diminished in size, continued to secrete milk, and did so when Blondel saw the woman a year later, though in a diminished quantity for several months. Her menses had not returned. For six months her abdomen had enlarged, and she had had flashes of heat, palpitation, dyspnea on exertion, and leucorrhea. Examination showed that she was not pregnant and that the symptoms resembling those which follow double castration were probably due to superinvolution of the uterus, the cavity of which measured only five centimetres.

GYNECOLOGY AND ABDOMINAL SURGERY.

Osteomalacia.—E. O. Croft¹⁹ had under his care a case of osteomalacia upon which he performed double oöphorectomy. The patient made a steady improvement, with a decrease of phosphoric acid. One month after the operation the urine contained 0.35 grain per ounce, against 20 grains before.

Concerning the Peritoneum and the Treatment of Exudative Peritonitis.—A. A. Berg²⁰ believes that bacteria alone, except when in very large quantities, are not sufficient to produce an exudative peritonitis; that this immunity on the part of the healthy peritoneum to the deleterious action of bacteria is due to its very rapid resorptive power; that this resorption under normal conditions is mainly by way of the blood vessels; that peritoneal resorption is an active cellular process and not a passive one. This cellular activity is manifested in the diseased as well as in the healthy condition, but to a somewhat lessened degree. The more marked the disease the greater is the interference with this activity, it being least when the peritoneal endothelium has been considerably altered, and ceasing altogether with the destruction of these cells, resorption by much modified peritoneum being similar to resorption by other types of cellular tissue.

In virtue of its rapid resorptive power, primary bacterial peritonitis is not a possibility, unless the bacteria are present

in such large numbers as to paralyze the peritoneal cells and so hinder their rapid resorption. There must primarily be a factor which by interfering with the cellular activity of the peritoneal cells favors a sedimentation of the bacteria, with their consequent further growth and development. Such factors may be either mechanical—*e.g.*, gauze packings, drainage tubes, etc.—or chemical, either organic or inorganic in character.

The toxemia and bacteriemia which are found in septic cases of peritonitis are due not only to resorption from the peritoneal membrane, but in very many cases they are equally due to the resorption by the intestinal mucosa of the toxins and bacteria which are present in the intestinal canal. In treating toxemia we should endeavor to promote free diuresis. This is best accomplished by frequent infusions of saline materials into the circulatory system. Berg is accustomed to infuse, either subcutaneously or intravenously, small quantities of hot normal saline solution, about 100 grammes every hour. In addition to the infusions he gives a nourishing diet and stimulants if necessary. When the toxemia is intestinal in origin we find the viscera paretic, distended, and congested. This condition is best met by drawing a distended coil of intestines into the wound and, after due protection with hot pads, opening the gut and irrigating it. When bacteriemia exists our present therapeutic procedures will avail us but little. Berg outlines his line of treatment as follows: Celiotomy, the site of the incision depending on the cause of the peritonitis; removal of the acting cause; if the intestine is very much distended, incision of one of the most distended coils and evacuation of its contents; suture of the bowel if its muscular wall is not paralyzed, otherwise drainage of the proximal end of the bowel; removal of the exudate from the free peritoneal cavity by moist sponges; protection of all raw spaces or modified peritoneal surfaces by gauze; closure of the rest of the abdominal wound; in addition the general systemic treatment for the toxemia and bacteriemia, as given above.

REFERENCES.

- ¹ L'Obst., July. ² Soc. d'Obst. de Paris, June 12. ³ Münch. med. Woch., No. 32. ⁴ Centralblatt für Gyn., No. 17. ⁵ Centralblatt für Gyn., No. 20.
- ⁶ Phil. Med. Jour., Sept. 15. ⁷ Wiener med. Woch., No. 19. ⁸ Soc. d'Obst. de Paris, June 21. ⁹ Soc. d'Obst., de Gyn. et de Ped. de Paris, Apr. 6.
- ¹⁰ Rev. mens. de Soc. de Gyn., d'Obst. et de Ped. de Bordeaux, April.
- ¹¹ Bost. Med. and Surg. Jour., Aug. 23. ¹² Med. Rec., Sept. 8. ¹³ L'Obst., Mar.
- ¹⁴ Thesis, Paris, 1900. ¹⁵ Soc. d'Obst., de Gyn. et de Ped. de Paris, June.
- ¹⁶ Ann. of Gyn. and Ped., Sept. ¹⁷ Ann. de Gyn., May. ¹⁸ Soc. d'Obst. de Paris, May 17. ¹⁹ Lancet, Aug. 25. ²⁰ Med. Rec., June 30.

DISEASES OF CHILDREN.

Bacterial Findings in the Stools of Infants with Gastro-enteritis.—Pigeaud¹ studied 32 cases, none more than 1 year old. Eleven of the babies were cured; their stools contained cocci alone in 5 cases, proteolytic bacteria in 3, cocci and proteolytic bacteria in 2, and the bacillus pyocyaneus in 1. Twenty-one cases died; of these the stools contained cocci alone 8 times, cocci and proteolytic bacteria 6 times, proteolytic bacteria alone in 3 cases, cocci and the bacillus proteus twice, and cocci, proteus, and proteolytic bacteria twice. In those cases in which cocci and proteolytes coexisted the latter were always the more numerous and rapidly outgrew the others in cultures; they were frequently found to be virulent. The cocci were the diplostreptococci of Escherich, which react positively to Gram's stain and grow in very short chains, rarely consisting of more than eight to twenty elements; the cultural distinctions from the streptococcus longus are marked. They were rarely virulent to white mice. It has not yet been proved that these short streptococci play a part in the enteritis of infancy, as they are not found there exclusively and it has not been sufficiently demonstrated that they are pathogenic.

Biology and Pathogenesis of Thrush.—Luigi Concetti² reaches the following conclusions in regard to this disease. 1. Idiopathic, primary thrush is a disease of early infancy, produced by a special fungus belonging to the genus *oidium* of the blastomycetes, a transition form between the blastomycetes and the hyphomycetes. 2. This *oidium albicans* may occur in cell form only, or put out filaments, according to the physical and chemical conditions of the medium in which it is developed, the cell forms predominating in solid or in acid media and the filamentous in liquid or in neutral and alkaline media. 3. The *oidium* cell is formed of a hard membrane with a protoplasm formed of two substances, one of which gives the reaction of protein and the other of fatty substances. There is undoubtedly a nucleus as well. 4. The *oidium* may invade the organism, causing true septicemia with localization in the different organs, or else it may produce miliary granulations formed of leucocytes and the fungus cells. Should infection not be severe enough to cause death, the fungus dies at the end of a few weeks and the granulations are reabsorbed, leaving a small cicatrix. 5. Thrush may act mechanically by obstructing renal filtration and causing uremia, or by thrombosis of important blood vessels (softening of the brain, perforation of the stomach walls). 6. Locally, at the points of inoculation, an irritation is produced with a gelatinous exudation and the formation of an encysted abscess. 7. A true miliary *oidiosis* is produced in animals by the absorption or inoculation of these bacteria. 8. The virulence of the *oidium* is increased by successive inoculations into different animals. This explains the gradual increase of virulence of thrush in

hospitals where it becomes epidemic. 9. The association of bacteria and the products of the microbes has no influence upon the virulence of thrush, excepting the tubercular bacillus. 10. The same may be said in regard to fasting, putrid and toxic gases, dampness, bad air, and darkness. 11. Outside of the organism the oïdium albicans does not secrete toxic or pathogenous products. 12. The pathogenetic action of the oïdium is due to the toxic properties of its protoplasm, and survives in cells which have died after having been subjected to the action of high temperatures, of formol, chloroform, desiccation, trituration, etc. 13. The substance of the oïdium, when reduced to a fine powder and subjected to centrifugal force, divides into a superior portion formed of proteic protoplasm (which we may call SO), and a lower portion formed of fragments of membrane and a part of the protoplasm, which may be called residual oïdium (RO). These two portions act in different ways. 14. The intravenous inoculation of RO produces death with great rapidity by thrombi and emboli. 15. The SO contains the greater part of the protein of the oïdium, possessing the pathogenetic properties peculiar to thrush. 16. The poison of the oïdium is not preformed in the fungus nor in the SO, but is found in the living organism by a complex biochemical process occurring between the substance which forms the protoplasm of the oïdium and the *living* cells of the animal organism. 17. The animal organism, under the influence of the soluble products of the fungus and the SO, does not produce immunizing substances, but only toxic substances. 18. If the fungus be subjected to slow desiccation in the presence of caustic potash, its virulence may be weakened, and small but gradually increasing doses may produce immunity in animals, provided that the injection be intravenous. Subcutaneous and peritoneal injections have not given the same result. 19. If care be taken to avoid the irritating action of the RO by careful trituration and strong dilution, small and gradually increasing doses will produce in rabbits the toleration of doses much larger than the minimum lethal dose of the virulent culture. Hence there is without doubt in RO an immunizing substance which, introduced into the living organism, will produce an antitoxin by means of a biochemical process contrary to that determined by SO. 20. In lesser degree this immunizing substance is slightly curative. 21. It must therefore be admitted that oïdium contains (a) a toxic substance, or one which becomes so in the living organism, and which is contained in SO; (b) an immunizing substance, which is perhaps curative as well, contained in RO, and which is also somewhat irritating locally. 22. The oïdium behaves toward animal organisms as do other pathogenic organisms of a lower order (schizomycetes), and experimental research throws much light upon many clinical and epidemiological facts which have hitherto been obscure.

Faucial Inflammation resembling Diphtheria.—Francis Villy* reports four cases. The points in which this affection

differs from true diphtheria are the following: 1. The local faucial lesion is of a more gangrenous nature; in fact, the substance which resembles membrane consists, for the greater part, of slough; ulceration disclosed by the separation of this slough is more constant and extensive than is usual in diphtheria. 2. The disease is of a more febrile nature; delirium is not uncommon. 3. Paralysis is not one of its sequelae. 4. Recovery, when it occurs, is more rapid, and cardiac affections are not to the front. 5. The Klebs-Löffler bacillus, if found in the throat at all, is present only in small numbers, and is probably not a factor in the causation of the lesion. 6. Streptococcus pyogenes is the preponderating organism found in the throat. 7. The disease is not at all affected by the administration of diphtheritic antitoxin.

Home Modification of Milk.—Charles N. Townsend* thus concludes his study of the subject: 1. The modification of cow's milk, with a knowledge of the percentages, is preferable to guesswork feeding of infants. 2. Percentage feeding can be carried out by a milk laboratory or by home modifications. 3. Milk laboratories are unavailable to many by reason of their absence or on account of the expense. 4. Laboratory modifications do not, in the experience of the writer, agree with infants as often as home modifications. 5. Laboratory modifications are necessarily subjected to more handling and transportation than home modifications. 6. Milk that is fresh, clean, and from cows free from tuberculosis is preferable uncooked; or, in other words, pasteurization and sterilization, although sometimes essential, are to be avoided if possible. 7. The method of home modification and of calculating percentages should and can be made extremely simple, and such modifications are sufficiently accurate and uniform. 8. The addition of cereals to the milk, in the form of barley or oatmeal water, is generally advisable after the seventh month, and is desirable before that age in some cases, as an aid to the digestibility of the milk.

Infantile Cerebral Palsy.—A. C. Cotton* reports 25 cases, including under the title all conditions of impaired function due to cerebral lesion, even if the only symptom be mental deficiency or epilepsy. A wide range of disorders is thus brought into one clinical group, which includes the restricted congenital spastic rigidity of Little, the cerebral type of hereditary spastic paraplegias described by Freund, Erb, Sachs, and others, as well as the lighter forms in which but slight evidence of any paresis is to be discovered at the time of examination. Of the cases under discussion, 18 are females and 11 males. The probable *commencement* of disease dates from or before birth at 17, while in 5 of the remainder the symptoms developed during the first year. The *exciting causes* were: Accidents of birth, 7; accidents, infections, or autointoxication during infancy or childhood, 7. *Form.*—There was a high percentage—7 out of 25, 28 per cent—of diplegics. *Convulsions.*—Eighteen gave history of convulsions during some part of the disease. *Mental Conditions.*—Out

of 11 double-sided lesions, 7 are idiots, 2 others are mentally impaired, 1 only is nearly normal. Out of the 8 hemiplegics, only 2 are idiots, 5 more or less impaired, 1 nearly normal. *Size of Head*.—That over half are microcephalic merely emphasizes the well-known fact that there is an arrest of brain growth in these cases. In fact, the same arrest may occur in the hydrocephalic. *Irregular Movements*.—Only 2 patients exhibited athetoid movements, and these two were both found in diplegics. *Dysphasias*.—This seems to be the rule. The cases showing improvement in speech, after complete arrest, were hemiplegic. This is suggestive of the utilization of the unaffected side of the cerebrum, which comes to the relief of aphasia caused by lesions occurring in early life.

Insanity, Cure of a Case of Epileptic.—Rose⁶ operated upon a 6-year-old boy who had been perfectly well until epileptic attacks occurred about two weeks after he ran against a door and received a wound above the left eyebrow. Within a month he became insane, was apparently deaf and dumb, recognized no one, and was extremely restless and unmanageable, biting and kicking his attendants. Urine and feces were passed in the bed. The wound on the forehead was neither tender nor red. It was reopened and found to be not adherent; the bone was perfectly healthy. A piece was removed and the meninges and brain substance were seen to be normal. The wound healed quickly, but the mental condition showed only slight improvement, and the epileptic attacks occurred at irregular intervals of a week or less. He was sent home, and within two months and a half after the operation he was apparently perfectly cured. Speech and hearing had returned, and the mental condition was most satisfactory. The entire illness, however, extending over a period of six and a half months, was completely forgotten by the child; he knows nothing at all about it.

Such "hypersthenic epilepsy" seems to be accompanied by a condition of intracranial swelling; the trephining created a safety valve, so to speak, and thus cure resulted.

Kidney, Atrophic, in Childhood.—Klages⁷ reviews the literature of the subject and reports a case of granular atrophic nephritis occurring in a boy of 12 years. He had always been well, with the exception of an attack of scarlatina at the age of 3 years; whether or not there was a complicating nephritis at that time could not be ascertained. Eight years later hemorrhagic nephritis developed suddenly and ran a subacute course. The heart became hypertrophied and there was marked accentuation of the second sound. A connection with the scarlet-fever attack cannot be excluded, and the process was probably primary at that time, becoming chronic later. It is possible that primary atrophic nephritis occurs in childhood, but it is rare. Far oftener the process follows a pre-existing primary nephritis of infectious origin.

Nasal Diphtheria complicated by Broncho-pneumonia.—Samuel McC. Hamill⁸ reports a case, the special interest of which consists in the fact that a mild diphtheritic rhinitis

apparently existed for several days without giving rise to any general symptoms of note, and also in the fact that there was final recovery from a prolonged, violent, migrating pneumonia. It seems probable that the pneumonic process was dependent on the diphtheria, although there was no evidence of pharyngeal or laryngeal involvement. Broncho-pneumonia secondary to diphtheria limited to the nasal cavities is rather uncommon. It is much more likely to follow the laryngeal forms. There were no paralyses nor after-effects following this attack. The convalescence was unusually rapid.

Naso-pharyngeal Disease in Pediatric Practice.—Francis Huber⁹ thus sums up his article:

1. The removal of the lymphoid hypertrophies in the naso- and oro-pharynx, with the cure of the associated naso-pharyngeal catarrh, will restore the patency and permeability of the nose. If done early, many local pathological changes may be avoided.
2. The general health will be more or less improved.
3. The mental faculties and general intelligence will be improved.
4. Defects in speech and in hearing due to nasal troubles will disappear.
5. Deafmutism may be relieved.
6. The functions of taste and smell will be restored.
7. Reflex neuroses of various kinds will be modified or cured.
8. Nasal and supposed pulmonary hemorrhages will disappear.
9. Thoracic deformities will be relieved or cured.
10. The tendency to acute rhinitis, pharyngitis, laryngitis, bronchitis, and pneumonia becomes less and less with the restoration of normal respiration.
11. The dangers attending the presence of enlarged cervical lymph nodes will be avoided.
12. The invasion of various infectious diseases is less likely when the nasal mucous membrane is in a healthy state.
13. The danger of meningial infection from the naso-pharynx will be lessened.
14. Ear complications in general, and particularly those incidental to the infectious diseases, will be avoided or rendered less dangerous.

Neuroses of Childhood.—O. J. Kauffmann¹⁰ speaks first of *migraine*, and considers the causes leading to it to be: 1. Heredity, direct or indirect. 2. Overwork, mental or physical. 3. Overstrain of the eyes. 4. Slight injuries. 5. Metallic, tobacco, alcoholic intoxications. 6. Depressed general health arising from previous disease, respiratory intoxication, disorders of the alimentary tract, or unsuitable diet. 7. Indigestion and constipation without evident impairment of the general health. No definite line severs the predisposing from the exciting causes, for in an individual who is led to the verge of migraine by, say, overwork at school, a slight extra amount of work will precipitate an attack. Air contaminated by frequent breathing is a very common cause of migraine and the related headaches; that the effect is produced rather by the poisonous material contained in the air than by deficient oxygenation of the blood, is shown by the comparative rareness of migraine or paroxysmal headache in those who suffer from cyanosis the result of chronic cardiac or pulmonary disease. One feature

of these toxemic patients is that their headaches usually begin in the morning, either before rising or soon after, because of the comparative inactivity of the kidneys during sleep, and the consequent accumulation of toxic materials in the blood during the night. Where fatigue or overwork brings on the paroxysms they occur most frequently during the latter part of the day. *Epilepsy* is the most serious of the neuroses under consideration. Its main causes may be grouped as follows: 1. Heredity, direct or indirect. 2. Damage to the peripheral nerves, cranial or spinal. 3. Emotion, fright, and shock. We must guard against the error of assuming this to be the sole cause. In many cases, although fright may occasion the first fit, yet one of the predisposing factors, such as indigestion, was at work long before the fright occurred. 4. Masturbation and retained smegma preputii. The former is a rare cause in boys, and, while it may produce epilepsy in girls, the author has never seen a case which could be accepted as satisfactory evidence on this point. 5. Commencing or disturbed menstruation. It is not quite clear whether the effect is produced in a reflex manner or by the working of the new function upon the emotions. 6. Congenital syphilis. 7. Uremia. 8. Alcohol or lead poisoning. 9. Acute infective diseases. 10. Rickets and teething. 11. Indigestion and gastro-intestinal disorders, including parasitic worms and constipation. In all probability a constipated condition predisposes to epilepsy by leading to a toxemia, and not by reflex irritation. In the *treatment* of the neuroses of childhood, correction of dietary errors is one of the main points requiring attention. Meats need not be entirely forbidden, but should not be taken more than once a day. In fact, it is more a question of regulating the amount of food than of prohibiting any special article. The action of the bowels demands attention; the saline purgatives are invaluable, and calomel is valuable. We should give, not an occasional purge, but a regular course of daily treatment extending over three or four weeks, to be followed by a gradual diminution of the dose, administered first on alternate days, then at longer intervals. As special treatment for certain neuroses, we may give in *chorea*, besides seclusion, darkness, and quiet, about 15 minims of Fowler's solution of arsenic twice or three times daily. If symptoms of poisoning arise, we should diminish but not stop the drug. *Enuresis nocturna* may be treated by potassium bromide, with either tincture of belladonna or of hyoscyamus as a nightly dose. It is well to administer some alkali, as citrate of potash. Should bacteriuria be found, its cause must be found and treated. *Migraine* depending upon autointoxication may be successfully cut short by the administration of a smart emetic. This is not useful in headache resulting from prolonged overwork of the body or mind. *Tetany*.—The bromides are the most efficient remedy when employed together with proper treatment for catarrh of the respiratory or intestinal tract. *Dreaming and Nightmare*.—Treat the primary cause. *Epilepsy*.—Bromides

of potassium and ammonium in equal quantities constitute the best treatment. The combination tends to resist the depression which is apt to ensue when potassium bromide alone is used for long. Taken in hand early and treated with perseverance, epilepsy is by no means so hopeless a malady in children as one might be led to believe by seeing it in the chronic adult epileptic.

Opium in the Summer Diarrheas of Children.—Floyd M. Crandall¹¹ says that because opium has been abused and has been the cause of much harm is no reason why it should be abandoned. To be used safely and profitably it must be used intelligently. In diarrhea the actions chiefly desired from opium are its power to relieve pain, to stimulate the heart, to decrease the secretion of the intestinal tract, and to check peristalsis. It is contraindicated (1) in the first stages of acute diarrhea, before the intestinal canal has been freed from decomposing matter; (2) when the passages are infrequent or of bad odor; (3) when there is a high temperature or cerebral symptoms are present; (4) when its use is followed by elevation of temperature or the passages become more offensive. It is indicated (1) when the passages are very frequent, with pain; (2) when the passages are excessively frequent, large and watery; (3) in dysenteric diarrhea, preceded by castor oil or a saline; (4) in late stages, with small, frequent, nagging passages; (5) when the passages consist largely of undigested food, and the bowels act as soon as food is taken into the stomach. The opiate should not be added to the ordinary diarrhea mixture, which is usually repeated at short intervals. It should be given alone. Intervals should be sufficient to permit the effect to partially subside before the dose is repeated. They should rarely be less than three hours, while four hours is more commonly advantageous. Paregoric and the deodorized tincture are the most available preparations for children.

Persistence of the Arterial Duct and its Diagnosis.—G. A. Gibson¹² gives the following as the essential facts upon which the diagnosis of persistent ductus arteriosus may be founded with perfect confidence. There may be no dyspnea, cyanosis, edema, or other evidence of disturbance of the general circulation, and the recognition of the lesion may depend entirely on the presence of a few physical signs. Inspection may fail to reveal any facts of diagnostic importance; palpation usually reveals the long thrill following the apical impulse, and enduring beyond the recoil of the blood on the semilunar cusps, which may be felt during the thrill; percussion may not show any enlargement of the cardiac dulness, while auscultation gives convincing evidence of the lesion in a murmur which may be regarded as almost pathognomonic. Beginning distinctly after the first sound, it accompanies the latter part of that sound, occupies the short pause, accompanies the second sound, which may be accentuated in the pulmonary area or may be, and often is, doubled, and finally dies away during the long pause.

Pneumonia caused by a Germ simulating the Meningococcus.—Bernheim¹⁵ reports a case of fatal pneumonia occurring in a rachitic baby 14 months old. At the autopsy scattered areas of pneumonia were found in both lungs. The only micro-organism present was a diplococcus simulating markedly the meningococcus of Weichselbaum, and differing from the pneumococcus of Fränkel because of its negative reaction to Gram's stain and the absence of a capsule. The coccus was not notably pathogenic to animals. The fact that meningococci have been found in the nasal secretions of healthy individuals explains their occurrence as the etiological factor in a primary pneumonia.

Pneumococcus Grippe in Childhood.—Luzzatto¹ observed two epidemics of grippe occurring in the children's clinic at Graz and affecting only children under 3 years of age. The incubation period lasted from one to four days. The temperature usually rose suddenly, rarely after a chill, and irritation, anorexia, thirst, vomiting, and coated tongue were soon followed by a catarrhal condition of the upper respiratory tract. The temperature curve either simulated that of a mild typhoid case, or the sudden initial rise was followed in a few days by a steady fall with morning remissions. With the latter type the duration of the attack was shorter than with the former. Uncomplicated cases lasted four to fifteen days. A characteristic symptom was a persistent cough with a negative condition of the lungs. Diarrhea was common; convulsions and tremors may occur, and two cases of a mild exanthem of short duration were observed. Examination of the nasal mucus and sputum early in the attack demonstrated large numbers of encapsulated diplococci (Fränkel's pneumococcus), while the influenza bacillus was not found. The most frequent complications were bronchitis and lobular pneumonia; croupous pneumonia was also observed in one instance. Convalescence from a previous disease and rachitis of the thorax predispose to the lung complications. Otitis media occurred very frequently.

Microscopical examination of the lungs in the fatal cases showed the presence of a primary affection of the large and small bronchi, extending to the lung tissues. Pneumococci were present in large numbers. The disease consists, then, of an acute pneumococcus infection, which may remain localized in the upper respiratory tract, may cause severe lung complications (especially in weak subjects), or, finally, a pneumococcus pyemia.

Prurigo in Childhood.—Charles Mas¹³ states: 1. That prurigo simplex and Hebra's prurigo are simply acute and chronic forms of the same disease. 2. The chief objective symptom of prurigo is the papulo-vesicle. 3. Prurigo simplex frequently occurs in childhood, and seems to be more active during the two first years of life. The primary lesion is a small, acuminate, pinkish papule, white at the apex from an accumulation of serum. It dries rapidly, and is sometimes developed upon a base of urticaria. The eruption occurs in

successive groups, occurring chiefly on the external surface of the upper limbs, the anterior surface of the lower limbs, and the posterior gluteal region. The acute form lasts from two weeks to two months; subacute forms may go on for months or years. Pruritus is the dominant subjective symptom; it is intense, with nocturnal exacerbations, and precedes the cutaneous lesion. The termination is favorable. 4. There is an atypical prurigo with polymorphous lesions. 5. Hebra's prurigo is the chronic form; it appears in early infancy, beginning with pruritus, some urticaria, and a papulo-vesicular eruption; the latter soon turn into red, inflamed, oozing patches, to which scratching adds eczema and lichen with hypertrophy of the ganglia. This condition is rebellious to treatment. 6. Such hereditary influences as tuberculosis, syphilis, and especially alcoholism, arthritism, and neuropathy, predispose to the disease. It is pre-eminently a toxidermia; an affection of internal origin, arising under the influence of gastro-intestinal fermentations; the result of an auto-intoxication caused by errors of diet, overfeeding, or food not appropriate to the age of the child or to the digestive tract. The nervous system is affected, and a vasomotor disturbance results in the pruritus and the cutaneous lesions. Infectious diseases, the eruptive fevers in especial, appear to stimulate the development of prurigo. 7. The essential basis of treatment is a rigid diet, having milk as its chief element. Lactic acid, administered internally, is the medicament which so far appears to have given the best results in overcoming the pruritus. Lotions of vinegar, followed by the application of inert powders, with or without bandaging, constitute the best external treatment.

Varicella Eruption, Influence of Skin Irritation on.—Starck¹ details 2 cases in which the eruption of varicella was very much more marked over the chest than over the rest of the body, owing to the fact that an empyema dressing in one case, and a Priessnitz bandage for pneumonia in the other, had irritated the skin in that region just before the attack of varicella developed. In this respect varicella acts similarly to variola and vaccinia. Thus the distribution of the rash is not only dependent upon the intensity of the infection, but also upon the tenderness of the skin itself and upon certain external influences.

REFERENCES.

- ¹ Jahrbuch f. Kinderhk., vol. lii. No. 2. ² Arch. de Méd. des Enfants, Aug., Sept., Oct. ³ Med. Chronicle, Sept. ⁴ Bost. Med. and Surg. Jour., Oct. 4. ⁵ Jour. Am. Med. Assoc., Sept. 15. ⁶ Deutsche med. Wochens., vol. xxvi. No. 43. ⁷ Der Kinderarzt, vol. xv. Nos. 9 and 10. ⁸ Ped., Aug. 15. ⁹ Arch. of Ped., Aug. ¹⁰ Birmingham Med. Review, Sept. ¹¹ International Med. Mag., July. ¹² Edin. Med. Jour. July. ¹³ Deutsche med. Wochens., vol. xxvi. No. 40. ¹⁴ Thèse de Montpellier, 1900. ¹⁵ University Med. Mag., July. ¹⁶ University Med. Mag. Oct. ¹⁷ L'Union méd. de Canada, Sept. ¹⁸ Edin. Med. Jour., Sept. ¹⁹ Annals of Gyn. and Ped., Sept. 1. ²⁰ Bost. Med. and Surg. Jour., Sept. 20. ²¹ Münchener med. Wochens., vol. xlvii., No. 43. ²² Albany Med. Annals, Oct.

INDEX.

A

	PAGE.
Abortion, criminal.....	413
Abscess, cerebral.....	562
tubo-ovarian. Ricketts.....	659, 744
Aceonuria during pregnancy.....	262
Adenocarcinoma, metastatic papillary, of the recto-vaginal septum.	
Beyea.....	373, 393
of the endometrium with fibromyoma of the uterus.	
Broun.....	565
of the uterus removed by vaginal hysterectomy.	
Beldt.....	240
Adenoids in children.....	746
postnasal, in children.....	280
Adrenal, accessory, in the broad ligament. Warthin.....	797
Air embolism.....	550
Albuminuria, intermittent, swelling of eyelids with, in children.....	142
interruption of pregnancy on account of.....	549
of pregnancy.....	410
Alcohol, passage of, from mother to fetus.....	883
Allaben The application of forceps.....	32
American girl of to-day Engelmann.....	753
Gynecological Society, early years of. Chadwick.....	108
Gynecological Society, personal factor in the work of. Van	
de Warker.....	108
Anastomosis of the ureters with the intestine. Peterson.....	95
on hollow viscera, method of performing, with a new in-	
strument. O'Hara.....	81, 225
Anemia, progressive pernicious, in childhood.....	282
Aneurism of the internal carotid after tonsillar abscess.....	130
Angiotribe in abdominal surgery.....	419, 559
Antitoxin and intubation.....	275
diphtheria.....	131, 273
diphtheria, peculiar disease following use of.....	132
Antitoxins and toxins.....	2-6
Appendicitis and dysmenorrhea, relation between. McLaren.....	103
and peri-appendicular inflammation, conditions simu-	
lating.....	126
and pregnancy.....	583
chronic catarrhal, from fecal concretions in the apex.	
Beldt.....	108
in childhood, causation and frequency.....	422
Appendix, primary cancer of.....	416, 560
Arrhythmia cordis complicating fibromata uteri.....	553
Aspell. Tetanus following hysterectomy.....	867
Atlee. Placenta previa.....	388

B

Bacon. Mutilating operations in obstetrics.....	62
Baldwin (L. G.). Silk ligature removed from an abscess cavity.....	246
Baldwin (J. F.). Diagnosis of ectopic pregnancy before rupture.....	605, 737
Balloch. Hernia in children.....	216
Balloon, modified. De Ribes.....	882
Band's ring, retraction of.....	412
Beck. Suspending the uterus on the round ligaments.....	365
Beyea. Metastatic papillary adenocarcinoma of the recto-vaginal	
septum.....	373, 393
Ruptured tubal pregnancy operated on while in collapse....	848

	PAGE
Bird. Placenta previa.....	223
Bladder, curettement of, for chronic cystitis. Cumston.....	721
influence of the uterus upon	420
removal of, preliminary to hysterectomy for cancer.....	124
Blood pressure in neuropathic children	136
Boldt. Adenocarcinoma of the uterus removed by vaginal hysterectomy.....	240
Chronic catarrhal appendicitis from fecal concretions in apex	108
Chronic salpingo-oöphoritis	110
Dermoid ovarian tumor removed from a healthy ovary.....	242
Fibromyomatous uterus removed by abdominal hysterectomy,	111, 243
Glass hypodermatic syringe.....	855
Multiple fibromyomatous uterus removed by vaginal hysterectomy.....	110
Submucous fibroid from the fundus uteri.....	109
Uterus removed by vaginal hysterectomy for sarcoma.....	242
Uterine fibroid polypus.....	110
Vaginal hysterio-salpingo oöphorectomy.....	110
Books injurious to the eyes.....	130
Bovée. Cancer of the uterus.....	542
Cancer of the uterus and a detached fibroid.....	252
Complete laceration of the perineum in young girls.....	490, 543
Double ovarian dermoid tumors.....	539
Double tubo-ovarian cysts.....	539
Ureteral implantation.....	99
Uterine fibroids.....	540
Bowen. Malaria in infant one week old.....	537
Brettaner. Lymphosarcoma of the intestine.....	853
Brodhead. Treatment of persistent occipito-posterior positions of the vertex.....	806, 856
Bronchitis not a contraindication for ether anesthesia. Reamy.....	101
Broncho-pneumonia complicating nasal diphtheria.....	891
Brothers. Gonorrheal pyosalpinx.....	240
Broun. Adenocarcinoma of the endometrium with fibromyoma of the uterus.....	865
Cancer of both ovaries with cancer of both mammae.....	863
Ectopic gestation with pyosalpinx of the other side.....	863
New vasotribe.....	248
Papillomatous cysts of both ovaries.....	864
Burrage. Remote results of conservative operations on the ovaries and tubes	90, 195
Byers. Prevention and treatment of postpartum hemorrhage.....	433

C

Canal, utero-vaginal, laceration of soft parts of.....	881
Cancer, hysterectomy for, removal of the bladder preliminary to.....	124
of both ovaries with cancer of both mammae. Broun.....	863
of the stomach in the young	131
primary cervical, in a nullipara. Weir.....	377
primary, of body of uterus	416
primary, of the Fallopian tube	415
primary, of the vermiform appendix.....	416, 560
uterine. Bovée	542
uterine, abdominal vs. vaginal hysterectomy for.....	416
uterine, and a detached fibroid. Bovée	252
complicating fibromata uterine.....	273
Caries, dental, in public school children.....	425
Carotid, internal, aneurism of, after tonsillar abscess.....	130
Carr. Objections to symphyseotomy.....	474, 538
Carstens. Ligature, and value of dry sterilized catgut.....	672, 741
Casts illustrating the anatomy of pregnancy and labor. Webster.....	94
Catarrh, chronic tubal, electrolytic dilatation of Eustachian tubes in.....	276
Catgut, value of dry sterilized. Carstens.....	672, 741

	PAGE
Celiotomy, bilateral inguinal, and shortening of the round ligaments via the dilated internal inguinal rings. Goldspohn.	613, 715
Cervix, amputation of, and hysteropexy, effect on pregnancy and labor	552
amputation of, for chronic metritis.....	265
dilatation of, and curettage, followed by pelvic extraperitoneal hematocele. Corson.....	516
mechanical dilatation of.....	260
plastic operations on.....	264
primary cancer of, in a nullipara. Weir	377
Chadwick. Early years of the American Gynecological Society.....	108
Chairs, school.....	570
Chart for the determination of pelvic asymmetry from a simple method of external pelvimetry. Harris.....	105
Children, diseases of, practice and precept.....	138
rachitic, peculiar crystals in bones of, treated with suprarenal substance.....	139
study of diseases of.....	285
Chloride of zinc for catarrhal endometritis	555
Cholecystectomy for gallstones	123
Chorea in children.....	423, 747
Chorion, hernia or diverticulum of. Laidley.....	666, 738
Citrophen in pertussis.....	568
Clarke. Malignant disease of the pelvic organs.....	641
Constipation, chronic, of children. Cook.....	470, 540
Cook. Chronic constipation of children.....	470, 540
Cord, umbilical, strangulation by amniotic bridle	258
Corpus luteum in relation to labor.....	883
Corson. Pelvic extraperitoneal hematocele following dilatation of the cervix and curettage.	516
Cragin. Treatment of full-term ectopic gestation.....	103
Craniotomy, difficult.....	881
Cretin successfully treated with thyroid extract.....	425
Crises of development	747
Croup, symptoms formerly known as	424
Cumston. Treatment of chronic cystitis by curettement of the bladder and instillations of corrosive sublimate	721
Cyst, dermoid, complicating pregnancy.....	551
dermoid, traumatic rupture of. Le Conte.....	226
in the anterior vaginal wall. West.....	867
left, of broad ligament and right ovarian cystomata. Grandin.....	180
multilocular ovarian.....	267
of the abdominal wall	558
ovarian, and pyosalpinx. Grandin	108
ovarian, removed after a normal delivery. Le Conte.....	226
ovarian dermoid, expelled through the rectum. Pryor.	240
ovarian, torsion of pedicle of.	554
ovarian, torsion of pedicle of, during pregnancy.....	551
parovarian.....	270
Cystitis, treatment of chronic, by curettement and corrosive sublimate. Cumston.	721
Cysto-epithelioma of the ovary	414
Cysts, double tubo-ovarian. Bovee	539
in the abdominal wall.....	415
ovarian, origin of. Jones	519
papillomatous, of both ovaries. Brown.....	864

D

Davenport. Intra-abdominal amputation of the uterus	99
Davis (E. P.). Ruptured tubal pregnancy.....	847
Syncytioma malignum and ectopic gestation causing pernicious nausea	1
Davis (W. E. B.). Composite teratoma of the ovary.....	720
Deaver. Simple methods in surgery of the pelvis.....	656, 742

	PAGE
Degeneration, infantile cerebral.....	429, 430
Delivery, topics in connection with the pathology of. Webster	18
De Musset's symptom.....	564
De Ribes balloon, modified.....	882
Dermoid cyst complicating pregnancy.....	551
cyst, ovarian, expelled through the rectum. Pryor.....	240
cyst, traumatic rupture of. Le Conte.....	226
of the ovary from an otherwise healthy ovary. Boldt.....	242
tumors, double ovarian. Bovée.....	539
Dermoids in which fluid became solid. Talbot.....	111
Development, crises of.....	747
De Witt. Membranous dysmenorrhea.....	308
Diachylon as an abortifacient.....	559
Diagnosis, error in.....	271
Diarrhea, summer.....	284, 884
Dilettanteism in medicine.....	749
Diphtheria.....	749
antitoxin.....	131, 132, 273
faucial inflammation resembling.....	889
nasal, complicated by broncho-pneumonia.....	891
relapses of.....	282
stenosis following.....	137
Disease, malignant, of the pelvic organs. Clarke.....	641
Diseases, children's, practice and precept in.....	138
children's, study of.....	285
dangerous communicable, how spread.....	563
infectious, followed by acute mastoiditis in children.....	421
Displacements, uterine, surgical treatment of. Reed	584, 737
Doran. Ectopic gestation.....	254
Dorland. Rôle of the liver in the production of eclampsia.....	369, 395
Dublin method of delivery of the placenta.....	122
Duct, arterial, persistence of.....	894
Dudley. Pregnancy following operation on ovaries and tubes.....	397
Superior occipital hydrancephalocele successfully operated upon.....	212
Dunning. Acute senile endometritis.....	126, 555, 648, 744
Duodenum, obliteration of.....	560
Dysmenorrhea and appendicitis, relation between. McLaren.....	103
membranous. De Witt	308
Dystocia due to size of shoulders ..	552
due to uterine fibroids.....	410
E	
Ear, middle, children's diseases due to latent inflammation of.....	277
middle, inflammation of, in children.....	568
Eclampsia.....	341, 405, 407, 549
rôle of the liver in. Dorland	369, 395
Edebohls. Migrated ovarian tumors	99
Embolism, air.....	550
Emmet. Reminiscences associated with gynecology	107
Endometritis, acute senile. Dunning.....	126, 555, 648, 744
catarrhal, chloride of zinc for	555
gonorrheal.....	271
hemorrhagic, of early pregnancy ..	556
Engelmann. The American girl of to-day	753
Epilepsy in childhood.....	751
Epileptic, cure of insanity in an.....	891
Epithelioma of the vulva. Noble	204, 224
Ether anesthesia, bronchial disease not a contraindication. Reamy.....	101
Eyelids, swelling of, with intermittent albuminuria, in children.....	142
Eyes, books injurious to.....	130
F	
Face presentations. McLean.....	105
Feeding, artificial, of infants.....	562
substitute infant	572

	PAGE
Femur, fracture of, in children	428
Fetus and liquor amnii, infection of, before rupture of membranes...	409
retention of dead	257, 262, 553
Fibroid causing inversion of the uterus	557
in patient sixty years old. Talbot	111
polypus, uterine. Boldt	110
submucous, from the fundus uteri. Boldt	109
tumors complicating pregnancy	552
uterine. Bovée	540
uterine. Vineberg	854
Fibroids obstructing labor, Porro-Cesarean hysterectomy in a case of.	
Routh	544
in gynecology. Garrigues	229
in the non-pregnant uterus. Fish	676, 744
multiple with four-months pregnancy. Talbot.	111
suppurating, labor complicated by	410
uterine	263, 415, 556
uterine, dystocia due to	410
uterine, evolution of my technique in the treatment of.	
Kelly	99, 289
Fibrolipoma, paranephritic	128
Fibroma, ovarian	128, 267, 553
ovarian. Laidley	661, 737
uteri. arrhythmia cordis complicating	558
Fibromata, uterine cancer complicating	273
Fistula in ano, infection of, subsequent to puerperal metritis. Stinson	384
vesico-vaginal	128, 870
Fixation, vaginal. Vineberg	168
Forceps, application of. Allaben	32
for anastomosis on hollow viscera. O'Hara	81, 235
Formalin as an antiseptic	420
Fibromyoma of the round ligament	417
ovarian	128
uterine, relations of heart affections to. Wilson	118
uterine, with adenocarcinoma of the endometrium	
Broun	865
Fibromyomata, uterine, and fibroid of the right ovary. Weir	380
uterine, abdominal hysterectomy for. Boldt	111, 243
uterine, removed by vaginal hysterectomy. Grandin	110
Fibrosarcoma of the ilium complicating pregnancy	261
Fish, Treatment of fibroids in the non-pregnant uterus	676, 744
Fiske, Congenital ventral hernia	845
Fry, Indication for symphyseotomy	487, 536

G

Gall bladder, surgery of. Vander Veer	683, 731
Gallstones, cholecystectomy for	123
Garrigues, Fibroids in gynecology	229
Gastro-enteritis, bacterial findings in stools of infants with	888
Gestation, double ectopic	882
ectopic. Bérouin	261
ectopic. Doran	254
ectopic. Talbot	111
ectopic, and synechioma malignum causing pernicious nau-	
sea. Davis and Harris	1
ectopic, treatment of full-term. Cragin	103
ectopic, tubercular meningitis following operation for.	561
(See also Pregnancy, ectopic)	
Gilliam, Round-ligament ventrosuspension of the uterus	717
Girl, the American, of to-day. Engelmann	753
Goldspohn, Bilateral inguinal celiotomy and shortening of the round	
ligaments via the dilated internal inguinal rings.	613, 715
Gonorrhea, endometritic	271
in the female	125

	PAGE
Grandin. Pyosalpinx and ovarian cyst.....	108
Right ovarian cyst and left cyst of the broad ligament....	108
Toxemia of pregnancy.....	105
Graz, rubeola epidemic in	283
Grippe, pneumococcus, in childhood.....	895
"Growing pains" as symptom of rheumatism	134
Growth of children, can it be stimulated?.....	421
Growths, postrectal or presacral. Ross	629, 741
Gynecology in 1876 and in 1900. Skene... ..	107
reminiscences associated with. Emmet.. ..	107

H

Hall. Education of the laity upon sexual matters.....	577, 738
Hands, disinfection of.	265
Harris (H. F.). Syncytioma malignum and ectopic gestation causing pernicious nausea.....	1
Harris (P. A.). Chart for the determination of pelvic asymmetry from a simple method of external pelvimetry.....	105
Heart, acute dilatation of, in influenza of children.....	561
disease in children.....	426
murmurs, functional and organic, in childhood.....	133
organic affections of, relations to fibromyoma of the uterus. Wilson.....	118
Hematocele, pelvic extraperitoneal, following cervical dilatation and curettage. Corson.....	516
Hematometra in right horn of undeveloped double uterus.....	418
in rudimentary horn of the uterus.	268
Hemorrhage, concealed accidental ..	410
in the third stage of labor.....	258
postpartum, prevention and treatment. Byers.	433
Hernia, congenital cerebral.. ..	746
congenital umbilical.. ..	559
congenital ventral. Fiske	845
in children. Balloch.....	206
of rudimentary uterus	560
or diverticulum of the chorion. Laidley.....	666, 738
Herzog. Pathology of tubal pregnancy.....	145
Hill. Retrodislocations of the uterus... ..	188
Hip, congenital dislocation of.....	750
Hip-joint disease, forty-one cases treated by operation for	564
disease, neuromuscular elements in.....	143
surgical anatomy of congenital dislocation of.....	141
Homatropin as a cycloplegic.....	751
Hospitals, private, and their management. Price.....	708, 738
Howitt. Perforated gastric ulcer	592, 727
Hydramnion with twin pregnancy.....	883
Hydrancephalocele, superior occipital, successfully operated upon. Dudley.....	212
Hydrometrocolpos, congenital, from imperforate hymen.....	271
Hydrosalpinx.....	558
with torsion of the pedicle.....	268
Hymen, imperforate, congenital hydrometrocolpos from.....	271
Hyperemesis gravidarum.....	881
Hysterectomy. Metcalf.....	511
abdominal.....	94, 99, 111, 243, 416
for cancer, removal of the bladder preliminary to....	124
for myoma	557
modification of. Davenport	99
Porro-Cesarean, with retroperitoneal treatment of the stump, in fibroids obstructing labor. Routh.	544
tetanus following. Aspell.....	867
vaginal	94, 110, 240, 242, 416, 418, 511
vaginal, for multiple fibromyomatous uterus. Boldt.	110

	PAGE
Hysteria in children	279
Hysteromyomectomy, vaginal, and morcellation of the myomatous uterus. Thienhaus	460
Hysteropexy and cervical amputation, effect of, on pregnancy.....	552
effect of, on pregnancy and labor.....	412
Hystero-salpingo-oöphorectomy, vaginal. Boldt.....	110

I

Idiocy, amaurotic family	429, 420
Illium, fibrosarcoma of, complicating pregnancy.....	261
Ill. Papilloma of the vulva	654, 738
Immunity, vaccinal, intrauterine transmission of.....	407
Impaction, management of. Lewis.....	51
Implantation, ureteral. Bovée.....	99
Infection, puerperal.....	550
through the tonsils.....	124
tubercular, in children, tonsils as entrance for.....	573
Inflammation, faucial, resembling diphtheria.....	889
of the middle ear, children's diseases due to latent.....	277
peri-appendicular, and appendicitis, conditions simulating.....	126
Influenza of children.....	420
of children, acute dilatation of the heart in.....	561
Ingraham. Jaundice following abdominal section.....	668
In memoriam—A. J. C. Skene	712
Insanity in an epileptic, cure of	891
of adolescence.....	566
Intestine, anastomosis of the ureters with. Peterson.....	95
lymphosarcoma of. Brettauer.....	533
obstruction of, following hysterectomy.....	857
obstruction of, in children.....	136, 567
tumors of.....	266
Intubation and antitoxin.....	275
of the larynx.....	431
prolonged	569
Inversion of the uterus.....	881
Item, American Association of Obstetricians and Gynecologists.....	288
New York Obstetrical Society.....	752
Southern Surgical and Gynecological Association.....	576

J

Janvrin. Nephrectomy	399
Jarman. Tumors complicating pregnancy.....	244
Jaundice following abdominal section. Ingraham.....	668
Johnson. Diseased ovaries and tubes	404
Johnston. Osteofibroma of the uterus.....	872
Johnstone. Internal secretion of the ovary	92
Jones. Origin of ovarian cysts.....	519

K

Kelly. Evolution of my technique in the treatment of fibroid uterine tumors.....	99, 289
Removal of pelvic inflammatory masses after bisection of the uterus	818, 869
Kidney, atrophic, in childhood.....	891
movable.....	269
primary tuberculosis of, surgical treatment	124
tuberculosis of, erroneous diagnosis.....	129
Klingensmith. Intrauterine pregnancy with retention of the fetal bones for seventeen years.....	386
Knox. Compression of the ureters by myomata.....	348, 496
Kreider. Symphyseotomy in Illinois	74

L

Labor complicated by congenital longitudinal septum of the vagina..	261
complicated by suppurating fibroids.....	410

	PAGE
Labor complicated by uterine myoma.....	411
corpus luteum in relation to.....	883
effect of hysteropexy on	413
effect of hysteropexy and cervical amputation on.....	552
hemorrhages in third stage.....	258
medullary narcosis during	553
obstructed by fibroids, Porro-Cesarean hysterectomy in. Routh.	544
premature, induction of	880
rupture of the membranes in normal.....	262
Laidley. Fibroma of the ovary	661, 737
Hernia or diverticulum of the ovary.....	666, 738
Laity, education of, upon sexual matters. Hall	577, 738
Larynx, direct examination of, in children	133
intubation of.....	431
Le Conte. Ovarian cyst removed after a normal delivery.....	226
Traumatic rupture of a dermoid cyst.....	226
Leucocytes in healthy and diseased infants.....	567
Leukemia, acute, in childhood.....	129
Lewis. The management of impacted cases.....	51
Ligament, broad, accessory adrenal body in. Warthin.....	797
broad left cyst of, and right ovarian cyst. Grandin.....	108
Ligaments, round, fibromyoma of.....	417
round, shortening via the dilated internal inguinal rings, and bilateral inguinal celiotomy. Goldspohn	613, 715
round, suspending the uterus on. Beck.....	365
round, suturing to the vaginal wall for retroversion and flexions of the uterus. Vineberg.....	93, 168
round, ventrosuspension of the uterus by. Gilliam.....	717
Ligature, silk, removed from abscess cavity. Baldwin.....	246
the, and value of dry sterilized catgut. Carstens	672, 741
Lipoma, retroperitoneal.....	414
Liquor amnii and fetus, infection of, before rupture of membranes....	409
Liver, rôle of, in eclampsia. Dorland.....	369, 395
Lumbar puncture in children, technique of.....	143
puncture in poliomyelitis anterior, bacteriological findings in,	137
Lymphosarcoma of the intestine. Brettauer.....	853
M	
McGannon. Vesico-vaginal fistula.....	870
McLaren. Relation between dysmenorrhea and appendicitis.	103
McLean. Face presentations.....	105
Malaria in an infant one week old. Bowen.....	537
in childhood associated with nephritis.....	431
Malformations, congenital.....	559
Mammæ, cancer of, with cancer of both ovaries. Broun.....	863
Marchand, adrenal of. Warthiu	797
Mastoiditis, acute, following infectious diseases in children.....	421
Meningitis, tubercular, following operation for ectopic gestation....	561
Meningocele.....	560
Metcalf. Hysterectomy.....	511
Metritis, chronic, amputation of cervix for.	265
puerperal, with subsequent infection of fistula in ano. Stinson.....	384
true, and uterine sclerosis.....	417
Milk, home modification of.....	890
poisoning	135
Monstrosities.....	262
Montgomery. Combined nephrectomy and ureterectomy.....	95
Moran. Puerperal eclampsia	341, 405
Mutilation in obstetrics. Bacon.....	62
Myofibromata, pregnancy with.....	411
Myoma, hysterectomy for.	557
uterine, complicating labor.....	411
Myomata, compression of ureters by. Knox.....	348, 496
pseudo, of the ovary.....	267

	PAGE
Myomectomy.....	412, 415, 558
Myxedema in childhood.....	568
N	
Narcosis medullary, during labor.....	553
Naso-pharynx, disease of, in pediatric practice.....	892
Nausea, pernicious, caused by syncytioma malignum and ectopic gestation Davis and Harris.....	1
Nephrectomy. Janvrin.....	399
and ureterectomy, combined. Montgomery.....	95
Nephritis in childhood occurring with malaria.....	431
Neuritis, optic, in children.....	432
Neuroses, children's.....	892
children's, blood pressure in.....	136
Newly-born, position of, in hospitals.....	136
Noble (C. P.). Epithelioma of the vulva.....	204, 224
Noble (G. H.). Spontaneous amputation of the tube and ovary.....	367
O	
Obstetrics, mutilating operations. Bacon.....	62
Obstruction, intestinal, in children.....	567
O'Hara. Method of performing anastomosis on hollow viscera, with a new instrument.....	81, 225
Ophthalmia neonatorum.....	432
Opium in infancy.....	279
in the summer diarrhea of children.....	894
purgation with, in children.....	569
Osteofibroma of the uterus Johnston.....	872
Osteomalacia.....	884
Otitis media in children.....	136, 278
media, chronic catarrhal, electrolytic dilatation of Eustachian tubes in.....	276
Otorrhea, chronic, Stacke operation in.....	278
Ovaries and tubes, conservative operations upon.....	268
and tubes, diseased. Johnson.....	404
and tubes, remote results of conservative operations on. Bur- rage.....	90, 195
removal of both, followed by first appearance of sexual feeling.....	839
Ovaritis, sclerocystic.....	413
Ovary and tube, pregnancy following operation on. Dudley.....	397
and tube, spontaneous amputation of. Noble.....	367
cancer of, with cancer of mammae. Broun.....	863
composite teratoma of. Davis.....	720
cyst of, and pyosalpinx. Grandin.....	108
cyst of, removed after normal delivery. Le Conte.....	226
cyst of, torsion of pedicle of.....	554
cyst of, torsion of pedicle during pregnancy.....	551
cysto-epithelioma of.....	414
cysts of, origin. Jones.....	519
dermoid of, removed from an otherwise healthy ovary. Boldt.....	242
double dermoid tumors of. Bovée.....	539
exsection of, with removal of the tubes.....	554
fibroid of the right, and fibromyomata uteri. Weir.....	380
fibroma of.....	267, 553, 661, 737
fibromyoma of the.....	128
functional disturbances of the. Wylie.....	113
incarcerated.....	554
insufficient secretion of.....	128
internal secretion of. Johnstone.....	92
migrated tumors of.....	99, 554
multilocular cyst of.....	267
multilocular tumor of.....	414
papillomatous cysts of. Broun.....	864
pseudomyxomata of.....	267
tumor of, torsion of pedicle.....	414

	PAGE
Palsy, infantile cerebral.....	890
Papilloma of the vulva. Ill.....	654, 738
Paralysis, infantile spinal, relations to spinal diseases of later life....	565
Parametritis, puerperal inguinal.....	121
Pedicle, treatment of, in the removal of intrapelvic growths. Smith.....	842
Pelvimetry, external, for determination of pelvic asymmetry. Harris.....	105
Pelvis, acute suppurative processes of.....	420
extirpation of organs of, value of abdominal and vaginal operations in.....	416
malignant disease of organs of. Clarke.....	641
removal of inflammatory masses of, after bisection of the uterus. Kelly.....	818, 869
simple methods in surgery of. Deaver.....	656, 742
suppurations in. Price.....	702
Percy. The technique of version.....	44
Perineum, complete laceration of, in young girls. Bovée.....	490, 543
Peritoneum, the, and the treatment of exudative peritonitis.....	884
Peritonitis, diffuse septic, and the elevated head and trunk posture..	125
exudative, and the peritoneum.....	884
tubercular.....	128, 560
tuberculous, in children.....	575
Perityphlitis in childhood, causation and frequency.....	422
Perivaginitis, dissecting phlegmonous.....	270
Pertussis, citrophren in.....	568
Peterson. Anastomosis of the ureters with the intestine.....	95
Placenta, Dublin method of delivery of ..	122
previa. Bird.....	223, 388, 551
retention of, treatment ..	551
transmission through.....	408
Pneumonia caused by a germ simulating the meningococcus..	895
Poliomyelitis anterior, findings in lumbar puncture ..	137
Polypus, uterine fibroid. Boldt.....	110
Polyuria in pregnancy.....	408
Porro's operation and Cesarean section. Reed.....	68
Pregnancy, acetonuria during.....	262
albuminuria of.....	410
and appendicitis.....	883
and labor, casts illustrating the anatomy of. Webster ..	94
and labor, effect of hysteropexy on.....	413
and syphilis.....	882
dermoid cyst complicating.....	551
ectopic ..	409
ectopic, diagnosis before rupture. Baldwin ..	605, 737
ectopic, with pyosalpinx of the other side. Broun.....	863
effect of hysteropexy and cervical amputation on ..	552
fibroid tumors complicating.....	552
fibrosarcoma of the ilium complicating ..	261
following operation on ovaries and tubes. Dudley ..	397
hemorrhagic endometritis of ..	556
interruption of, on account of albuminuria ..	549
intrauterine, with retention of fetal bones for seventeen years Klingensmith.....	386
polyuria in.....	408
pyemia during ..	550
reflex and electrical excitability in.....	259
ruptured tubal. Davis.....	847
ruptured tubal, operated on while in collapse. Beyea....	848
torsion of pedicle of ovarian cyst during.....	551
toxemia of. Grandin.....	105
traumatism during ..	883
tubal, pathology of. Herzog.....	145
tumors complicating. Jarman.....	244

	PAGE
Pregnancy, twin.....	262
twin, non ligation of placental end of first cord in.....	410
twin, with hydramnion.....	883
typhoid during.....	261
uncontrollable vomiting of.....	412
with multiple fibroids. Talbot.....	111
with myofibromata.....	411
X-ray during.....	412
Price. Pelvic suppurations.....	702
Private hospitals and their management.....	708, 738
Primiparae, aged.....	553
Prolapse, uterine, vaginal hysterectomy for.....	418
Prurigo in childhood.....	895
Pryor. Ovarian dermoid cyst expelled through the rectum.....	240
Purgation with opium in children.....	569
Pyemia during pregnancy.....	550
Pyometra in a virgin.....	558
Pyosalpinx.....	558
and ovarian cyst. Grandin.....	108
gonorrheal. Brothers.....	240
with ectopic gestation. Broun.....	863

R

Rachitis.....	139, 140
Reamy. Bronchial disease not a contraindication for ether anesthe- sia.....	101
Some kaleidoscopic pictures in rhyme.....	108
Rectum and vagina, combined opening for.....	420
disorders of, in children.....	570
ovarian dermoid cyst expelled through. Pryor.....	240
Reed (C. B.). Cesarean section and Porro's operation.....	68
Reed (C. A. L.) Surgical treatment of uterine displacements.....	584, 737
Respiration, intrauterine.....	407
Retrodeviation of the uterus.....	258, 272
Retrodislocations of the uterus. Hill.....	188
Reviews. Chapman. Heart Disease in Childhood and Youth.....	878
Cooke. A Manual of Obstetric Technique as applied to Private Practice.....	879
Cullen. Cancer of the Uterus.....	874
Hare and Hilder. Progressive Medicine.....	875
King. A Manual of Obstetrics.....	878
Lewis. Obstetric Clinic.....	877
May. Manual of the Diseases of the Eye for Students and General Practitioners.....	876
Rotson. Diseases of the Gall Bladder and Bile Ducts, in- cluding Gallstones.....	877
Stedman. Twentieth Century Practice.....	877
Transactions of the Southern Surgical and Gynecological Society. Vol. XII.....	879
Transactions of the American Association of Obstetricians and Gynecologists. Vol. XII.....	879
Rheumatism and chorea, relation between, in children.....	423
" growing pains " as symptom of.....	134
Richelot. Comparison of vaginal and abdominal operations.....	94
Ricketts. Tubo ovarian abscess.....	659, 744
Ringworm of the scalp.....	283
Ross. Postrectal or presacral growths.....	629, 741
Routh. Porro-Cesarean hysterectomy with retroperitoneal treatment of the stump in fibroids obstructing labor.....	544
Rubeola epidemic in Graz.....	283
Rupture of the membranes in normal labor.....	262
of the uterus.....	122, 411, 550, 879

S

	PAGE
Salpingo-oöphoritis, chronic. Boldt.....	110
Salt solution, use of, after abdominal section. Simpson.....	694, 742
Sarcoma deciduo-cellulare.....	555
uteri, vaginal hysterectomy. Boldt.....	242
Scalp, ringworm of.....	283
Scarlatina miliaris.....	283
Scarlet fever.....	140
School chairs.....	570
Sclerosis, uterine.....	566
uterine, and true metritis.....	417
Section, abdominal, salt solution after. Simpson.....	694, 742
Cesarean.....	410
Cesarean, and Porro's operation. Reed ..	68
jaundice following abdominal. Ingraham.....	668
Septicemia, puerperal.....	407
puerperal. antistreptococcus serum in ..	550
Serum, antistreptococcus, in puerperal septicemia.....	550
diphtheria, peculiar disease following use of.....	132
Simpson. Use of normal salt solution after abdominal section....	694, 742
Skene. Gynecology in 1876 and in 1900.....	107
Skene, A. J. C.—in memoriam.....	712
Smith (A. L.) Observations on Pryor's method of removing the fibroid uterus.....	100
Sexual feeling first appearing after removal of both ovaries ..	839
Smith (R. R.). Technique in dealing with the pedicle in the removal of intrapelvic growths.....	842
Spina bifida.....	445, 560
Spine, mechanics of lateral curvature of.....	571
Stacke operation in chronic otorrhea.....	278
Stenosis, postdiphtheritic.....	137
Stinson. Puerperal metritis with subsequent infection of fistula in ano.....	384
Stomach, cancer of, in the young.....	131
Stomatitis, diphtherial.....	132
Sugar in the urine during pregnancy.....	259
Suppurations, pelvic. Price.....	702
Surgery of the gall bladder. Vander Veer.....	683, 731
of the pelvis, simple methods in. Deaver ..	656, 742
Suture by layers and the through-and-through suture.....	559
Symphiseotomy, indication for. Fry.....	487, 536
in Illinois. Kreider.....	74
objections to. Carr.....	474, 538
without subsequent immobilization.....	582
Synecioma malignum and ectopic gestation causing pernicious nau- sea. Davis and Harris.....	1
Syphilis and pregnancy.....	882
treatment.....	420
Syringe, glass hypodermatic. Boldt.....	855

T

Talbot. Dermoid cysts in which fluid became solid.....	111
Ectopic gestation.....	111
Fibroid in patient sixty years old.....	111
Multiple fibroids with four-months pregnancy.....	111
Teratoma, composite, of the ovary. Davis.....	720
Tetanus following hysterectomy. Aspell.....	867
Thienhaus. Vaginal hysteromyomectomy and morcellation of the myomatous uterus.....	460
Thrush, etiology and pathology.....	888
Thyroid extract, cretin successfully treated with.....	425
Tinea favosa.....	144
Tonsils, infection through.....	134

	PAGE
Tonsils, children's, significance of, as entrance for tubercular infection	573
Toxemia of pregnancy. Grandin.....	105
Toxins and antitoxins.....	286
Training, physical, in school and at home.....	280
Transmission, placental.....	408
Tube and ovary, pregnancy following operation on. Dudley.....	397
and ovary, spontaneous amputation of. Noble.....	367
primary cancer of.....	415
Tuberculosis in children.....	574
of the female genital tract in children.....	574
primary renal, surgical treatment.....	124
renal, erroneous diagnosis of.....	129
Tubes, removal of, with exsection of the ovaries.....	554
supernumerary openings in.....	559
torsion of.....	555
and ovaries, conservative operations upon.....	268
and ovaries, results of conservative operations on. Burrage.....	195
Tumor, ovarian, torsion of pedicle of.....	414
Tumors complicating pregnancy. Jarman.....	244
intestinal.....	266
interligamentous.....	414
intraligamentary. technique of operations for. Wathen.....	335
migrated ovarian. Edebohls ..	99
migrated ovarian and parovarian ..	554
multilocular ovarian.....	414
postrectal or presacral. Ross.....	629, 741
Typhlitis in childhood, causation and frequency.....	422
Typhoid during pregnancy.....	261

U

Ulcer, perforated gastric. Howitt.....	592, 727
Uremia during pregnancy.....	549
Ureterectomy and nephrectomy, combined. Montgomery.....	95
Ureters, anastomosis of, with the intestine. Peterson.....	95
Urethra, diverticula of, in boys ..	576
Urine, sugar in, during pregnancy.....	259
Uterus, adenocarcinoma of, removed by vaginal hysterectomy. Boldt.....	240
bicornate.....	123
bisection of, followed by removal of pelvic inflammatory masses Kelly.....	818, 869
cancer of. Bovée.....	542
cancer of, abdominal vs. vaginal hysterectomy for.....	416
cancer of, and a detached fibroid. Bovée.....	252
cancer of, complicating fibromata.....	273
compression of, by myomata. Knox.....	348, 496
displacements of, surgical treatment. Reed.....	584, 737
extirpation of the, for excessive hypertrophy and prolapse.....	126
fibroid, Pryor's method of removing. Smith.....	100
fibroid. Vineberg.....	854
fibroid causing inversion of.....	557
fibroids of.....	263, 415, 540, 556
fibroids of, evolution of technique in treatment of. Kelly.....	99, 289
fibroids in the non-pregnant. Fish.....	676, 744
fibroids of, dystocia due to.....	410
fibroma of, complicated by arrhythmia cordis.....	558
fibromyoma of, relations to organic affections of the heart. Wilson.....	118
fibromyoma of, with adenocarcinoma of the endometrium.....	865
fibromyomata of, and fibroid of the right ovary. Weir.....	380
fibromyomatous. abdominal hysterectomy for. Boldt.....	111, 243
hematometra in rudimentary horn of.....	268
hysterical gravid.....	261
influence of, upon the bladder.....	420

	PAGE
Uterus, intra-abdominal amputation of. Davenport.....	99
inversion of.....	881
multiple fibromyomatous, removed by vaginal hysterectomy.	
Boldt.....	110
myoma of, complicating labor....	411
myomatous, morcellation of, with vaginal hysteromyomec-	
tomy. Thienhaus.....	460
operative treatment of complete prolapse of, in elderly women.	886
osteofibroma of. Johnston.....	872
parturient, rupture of.	122
primary cancer of body of.....	416
prolapse of, vaginal hysterectomy for.....	418
removed by vaginal hysterectomy for sarcoma. Boldt.....	242
retrodeviation of.	258, 272
retrodislocations of. Hill.....	188
retroversions and flexions of, suturing the round ligaments to	
the vaginal wall for. Vineberg.....	93, 163
retroverted, intra-abdominal operation for.....	125
round-ligament ventrosuspension. Gilliam.....	717
rudimentary, hernia of.....	560
rupture of.....	550, 879
spontaneous rupture of.....	411
submucous fibroid from fundus of. Boldt.....	109
superinvolution of.....	884
suspending the, on the round ligaments. Beck.....	365
undeveloped double, hematometra in right horn of.....	418

V

Vaccination, intrauterine, transmission of immunity from.....	407
Vagina and rectum, combined opening for....	420
congenital longitudinal septum of, complicating labor..	261
myomectomy through	415
Vander Veer. Surgery of the gall bladder....	683, 731
Van de Warker. Personal factor in the work of the American Gyne-	
cological Society.....	108
Varicella eruption, influence of skin irritation on.....	896
Vasotribe, a new. Broun.....	248
Vegetations, adenoid, in children.....	746
Version, technique of. Percy.....	44
Vertex, persistent occipito-posterior positions of. Brodhead. .	806, 856
Vineberg. Fibroid of the uterus....	854
Suturing the round ligaments to the vaginal wall for	
retroversions and flexions of the uterus.....	93, 168
Vomiting, uncontrollable, of pregnancy.....	412
Vulva, epithelioma of. Noble	204, 224
papilloma of. Ill.....	654, 738

W

Warthin. Accessory adrenal body in the broad ligament.....	797
Wathen. Technique of operations for intraligamentary tumors.....	335
Webster. Casts illustrating the anatomy of pregnancy and labor....	94
Selected topics connected with pathology of delivery.....	18
Weir. Fibromyomata uteri and fibroid of the right ovary....	380
Primary cancer of the cervix uteri in a nullipara.....	377
West. Cyst in the anterior vaginal wall.....	867
Wilson. Relations of organic affections of the heart to fibromyoma	
of the uterus.....	118
Spina bifida.....	445
Word-blindness, congenital.....	275
Wylie. Functional disturbances of the ovary	113

X

X-ray during pregnancy.....	412
-----------------------------	-----

TO CONTRIBUTORS AND SUBSCRIBERS.

ALL COMMUNICATIONS TO THIS JOURNAL, OF ANY NATURE WHATSOEVER, MUST BE CONTRIBUTED TO IT EXCLUSIVELY. THE EDITOR RELIES ON ALL CONTRIBUTORS CONFORMING STRICTLY TO THIS RULE.

The JOURNAL will be pleased to receive, and to translate at its own expense, contributions by Continental authors written in French, German, Swedish, or Italian, if on examination they prove desirable.

The Editor is not responsible for the views of contributors.

LITHOGRAPHIC PLATES OR ILLUSTRATIONS on wood are prepared FREE whenever required.

ALTERATIONS in the proof involving an excessive amount of work will be charged to authors at the rate of 50 cents an hour.

REPRINTS.—Contributors desiring *extra copies* of their articles can obtain them at reasonable rates by *application to the printers*, STETTINER BROS., Nos. 52, 54, 56, 58 Duane Street, New York, *immediately after the acceptance of the article by the Editor.*

Twenty reprints, of articles published among "ORIGINAL COMMUNICATIONS," are furnished free, *provided the request is distinctly stated on the manuscript* when it is sent to the Editor. Neither Editor nor Publishers take orders for reprints of any kind.

CONTRIBUTIONS, LETTERS, and all other communications relating solely to the editorial management of the JOURNAL should be sent DIRECTLY and EXCLUSIVELY to Dr. BROOKS H. WELLS, No. 34 West 45th Street, New York.

SUBSCRIPTIONS, EXCHANGES, BOOKS FOR REVIEW, and all business communications should be addressed to the publishers, 51 Fifth Avenue, New York.

PUBLISHERS and AUTHORS are informed that the space of the JOURNAL is so fully occupied by matter pertaining solely to the branches to which it is devoted, that only works treating of these subjects can be reviewed or noticed. Books and monographs, native and foreign, on *Obstetrical, Gynecological, and Pædiatrical* topics will be reviewed without fail, according to their merits and the space at disposal.

WILLIAM WOOD & COMPANY, PUBLISHERS,
51 FIFTH AVENUE, NEW YORK.

	PAGE
Uterus, intra-abdominal amputation of. Davenport.....	99
inversion of.....	881
multiple fibromyomatous, removed by vaginal hysterectomy. Boldt.....	110
myoma of, complicating labor....	411
myomatous, morcellation of, with vaginal hysteromyomec-	

Official Figures.....

Reported to American Medical Association
by Chairman of Section on Pediatrics:

Cases treated with Mulford's Diphtheria Antitoxin	6325
Recoveries	6065
MORTALITY	4.11%
Cases treated with all other American and foreign Serums	859
Recoveries	795
MORTALITY	7.46%

Full report with literature sent upon request.

Mulford's Antitoxin

is most extensively employed and . . . **Saves** lives

H. K. MULFORD COMPANY

To secure best results
specify "Mulford's."

PHILADELPHIA

CHI

SVAPNIA

of the uterus.....	118
Spina bifida.....	445
Word-blindness, congenital.....	275
Wylie. Functional disturbances of the ovary	113

X

X-ray during pregnancy.....	412
-----------------------------	-----



RG
1
A57
v.42

The American journal of
Obstetrics and diseases
of women and children

Biological
& Medical
Serials

PLEASE DO NOT REMOVE
CARDS OR SLIPS FROM THIS POCKET

UNIVERSITY OF TORONTO LIBRARY

STOR

